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Special Issue



38 The Organic Root System

OVERVIEW When cold statistics and systems thinking threaten to cloud your judgment, remember this simple key to a long-lived business organism: People and culture count most. *By Megan Santosus*

48 Pop Quiz!

SCORECARD Where does your company measure up on our Organo-Metric Index? *By Megan Santosus*

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TURNAROUND TALES Sometimes the mark of a great company is how it bounces back from defeat. *By Gary Abramson*

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HUMAN RESOURCES In times of turmoil, Netscape knows the key to its success begins and ends with its people. *By Polly Schneider*

80 A Sense of Who You Are

CORPORATE IDENTITY As the pace of technological and corporate change accelerates, one thing stays the same: the past. And when you're strategizing your company's future, that's an excellent place to start. *By Tom Field*

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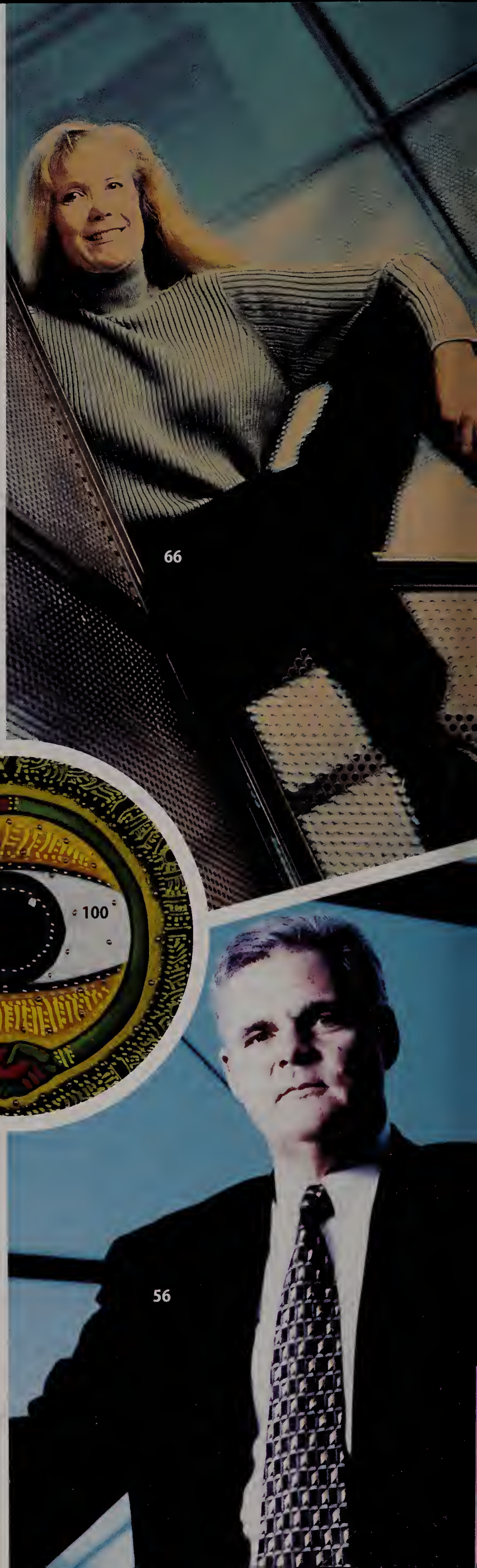
STRATEGIC ALLIANCES In a world of globalization and rapid change, the best route to business goals often involves a partnership. *By Peter Fabris*

100 The Corporate Skeleton

ADAPTIVE INFRASTRUCTURE The company fit for the new millennium needs a strong frame to support its heart and muscle. *By Derek Slater*

Cover photo by Craig Orsini

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Monday, 9:00 a.m.

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Tuesday, 2:00 p.m.

Microsoft Internet Explorer

Lookup Book

Online help

Information from database

Information from host application

Runs over the Internet

Image from database

Custom graphical buttons

So, You Want to Surf the Web?

Running in Saskatchewan
So You Want To Surf the Web? A Beginners Guide to the World Wide
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The Night of the Last Motorcade
There Came a Guru

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KNOWLEDGE MANAGEMENT Companies in the Information Age need to systematically manage what they know. *By Perry Glasser*

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META VIEW Success in the 21st century will require new levels of corporate candor. *By Dale Kutnick*

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EMERGING TECHNOLOGY As the Y2K deadline approaches, don't overlook PCs. *By Peggy King*

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SHOP TALK The head of IT at the British Petroleum Co. talks about the adaptive company. *By Megan Santosus*

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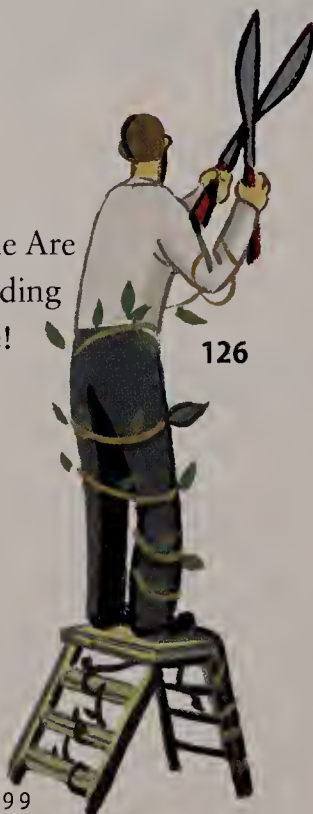
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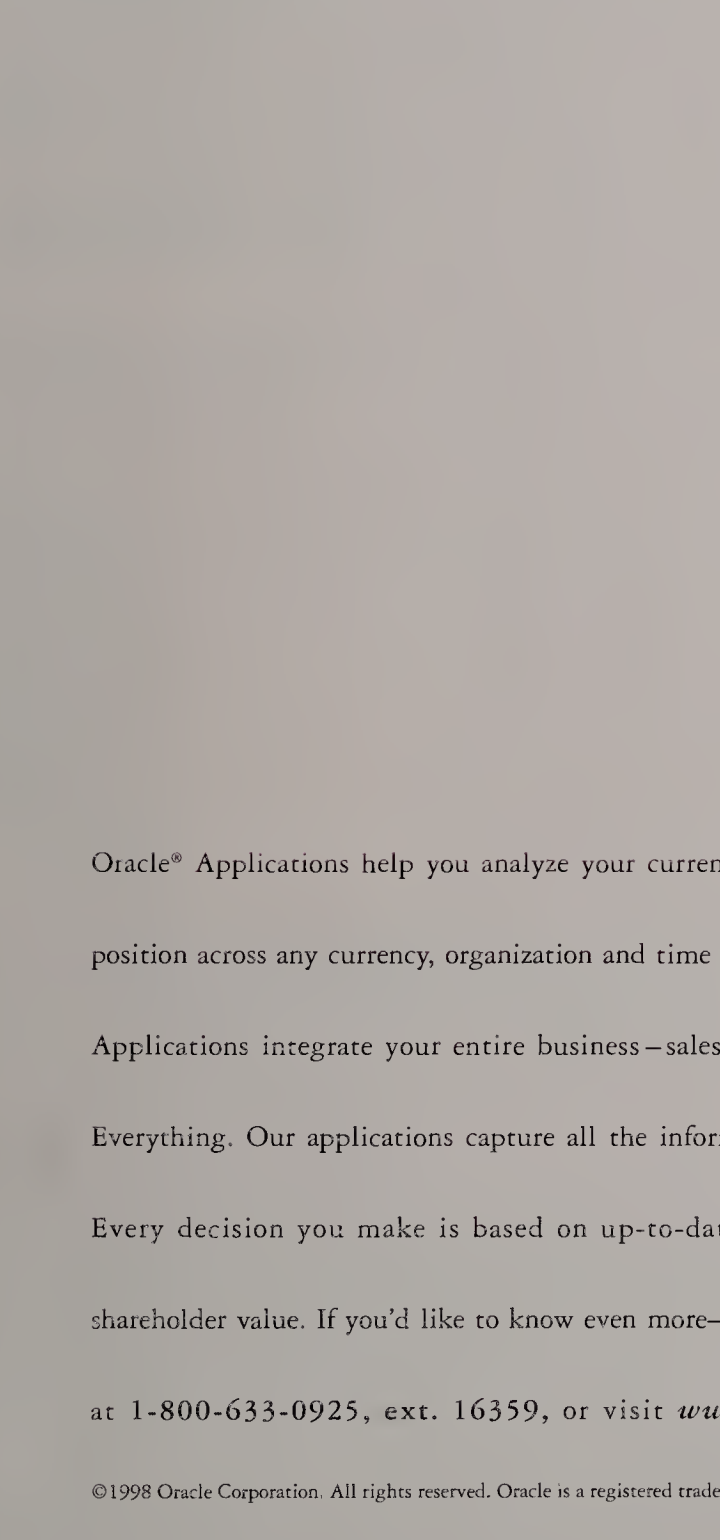
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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

When we were planning this special year-end issue, we debated what we should call it. We began with “The Smart Company” because we believe that using information effectively is central to a company’s present and future success. However, we quickly realized that being smart was not enough. As we talked with readers and advisers over the course of our planning cycle, we soon concluded that companies must also have a flexible, adaptable infrastructure, be adept at managing the people who do the company’s work, be willing and able to form partnerships when appropriate and foster a shared sense of the company’s identity and history among all its stakeholders. We think that these qualities would help today’s organizations make the transition to tomorrow’s economy—even in the face of significant setbacks.



The metaphor that emerged from these traits taken together was one of life. That led us to “The Organic Enterprise” as the title of our issue. Clearly, organizations develop a life of their own, and those that recognize, foster and exploit this stand a better chance of adapting to changes in economic and social conditions.

While only one of the articles in this issue explicitly addresses managing human potential (see a profile of Netscape beginning on Page 66), almost all of them underscore the human aspect of this type of business. From knowledge management to strategic alliances, organic companies are about brains, relationship building and behavior.

Publishing a magazine like *CIO* also depends on these attributes.

Kudos for this issue go to veteran Features Editor Megan Santosus, who oversaw the project, taking what began as an ethereal subject and developing it into something solid. Demands were made on her knowledge, experience and skills at every turn, and she responded consistently with her characteristic understated good sense.

Design is as important to any good magazine as text. Associate Graphic Designer Robin Belliveau wowed us with her striking interpretations of the organic concept and overcame some real constraints to make this issue stunning, accessible and reader friendly.

No issue is the product of just the project leaders. Thanks to all the fine writers, editors and designers whose efforts made “The Organic Enterprise” such a well-rounded success. Additional thanks go to Senior Editor Christopher Koch, who provided insight and research in the early phases of the project.

Finally, I’d like to thank the people not on staff who made this issue possible. In addition to our (amazing) editorial advisers, two people were extremely helpful in guiding our thinking: Arie de Geus, author of *The Living Company: Habits for Survival in a Turbulent Business Environment* (Harvard Business School Press, 1997), a former Royal Dutch/Shell Group executive who is now a visiting fellow at the London Business School, and Michael Fradette, a partner with Deloitte Consulting in Boston and co-author of *The Power of Corporate Kinetics: Create the Self-Adapting, Self-Renewing, Instant-Action Enterprise* (Simon & Schuster, 1998).

And to the readers of *CIO*: May all your organizations grow and prosper.

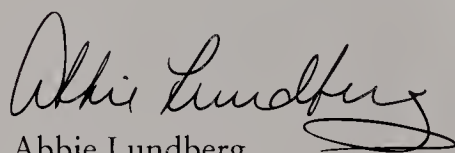
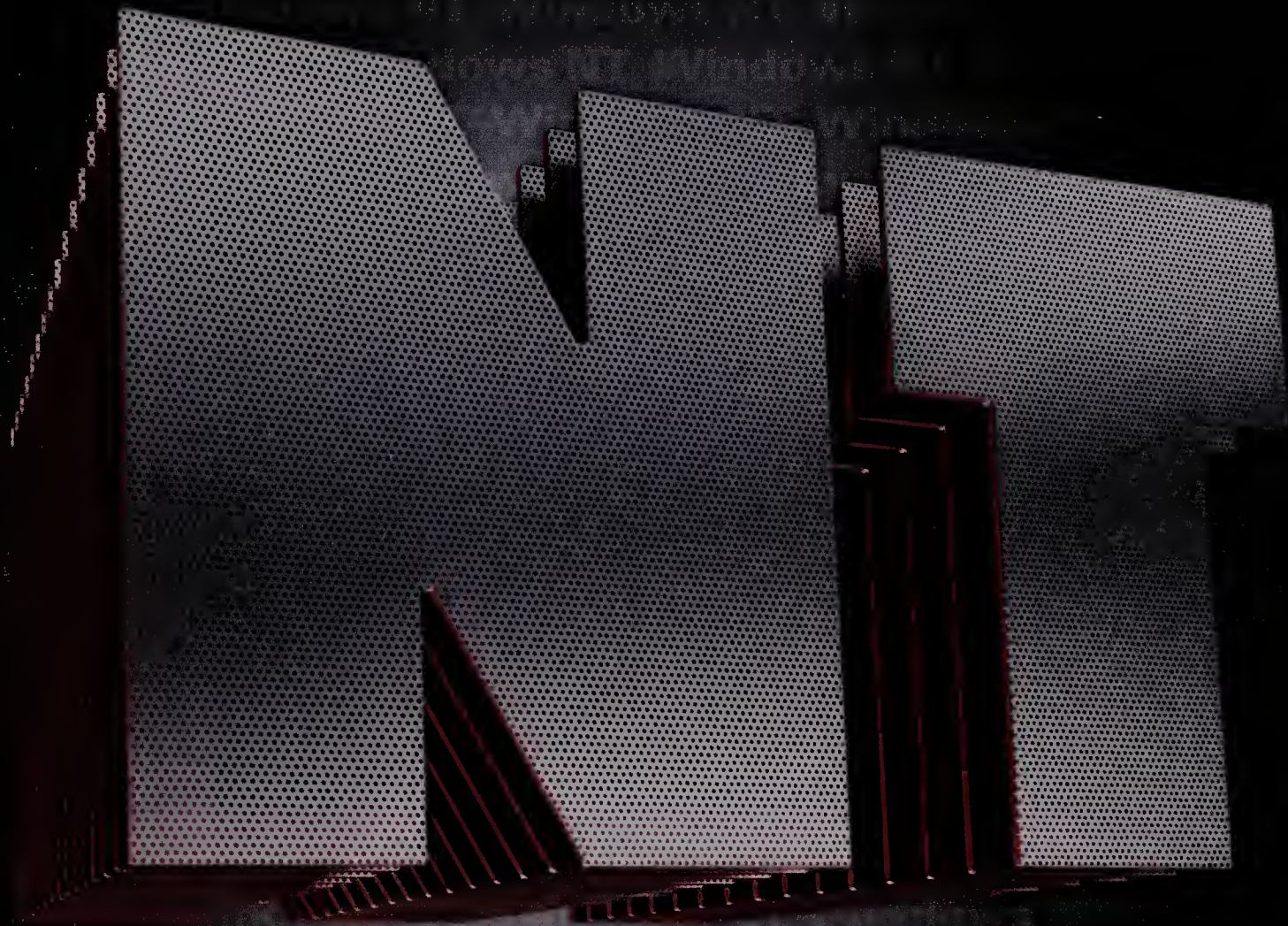

Abbie Lundberg
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COMMENTS ON CONSULTANTS
Thanks for a well-written article on methods to ensure success with the aid of consultants for IT projects ["Their Pain, Your Gain," *CIO* Section 2, Oct. 15, 1998]. I want to place emphasis on the fact within the article that it is the consultants' role to know if the project is beyond their scope of expertise and experience and to directly communicate that to the client. Unfortunately, the prospect of losing a project's income has many times distorted the focus of having the project be successful.

Anthony R. Dziedzic

Information Technology
Team Coach
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ardz@concentric.net

I enjoyed reading "Hired Brains" [*CIO* Section 2, Oct. 15, 1998], although I think it might have been more aptly called "Hired Bodies."

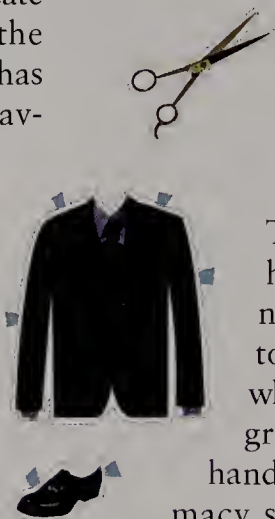
So much of the IT consulting industry has a "rent-a-body" mentality today, focusing solely on implementing IT projects (for which there are no internal IT resources) with little or no emphasis put on the business goals of the company. I suspect this disconnect may account for why your survey respondents are dissatisfied with the ROI of consulting projects.

As a result, I might add one more piece of advice for best practices in working with consultants: Make sure that your IT consultants understand

your business objectives and how the IT project will either make or save your company money. If it doesn't do one or the other, it's probably not worth doing at all. And if the consultants cannot quantify how the IT project meets bottom-line business goals, then they are merely hired bodies.

Ron Pettengill

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The Oct. 15 issue was pure hypocrisy. Clever companies maneuver their customers into a relationship where the cost of leaving is too great to bear. These golden handcuffs make customer intimacy sound more creepy than competitive. In "The Strangers in Your Midst," a pandering piece to the *CIO* audience of IT managers, the very same technique, when applied by consultants, is maligned as a vice.

For comic relief ("Let's Play Consultant!"), consultants are portrayed as selfish, self-absorbed and frivolous, right down to their Tag Heuers and BMWs (I have to admit, though, I laughed out loud over the Valentine's Day card with bullet points).

Consultants who take their profession seriously should not take offense at these predictable peccadilloes. This sort of stereotyping is derived from pettiness, not experience. Perhaps, just for balance, we should have a magazine of our own, *Consultant*, where we can portray CIOs as foolish and mercurial know-nothings. But then, Dilbert beat us to it.

Neil Raden

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CORRECTION

In "Five Keys to the Kingdom" [Threads, *CIO* Section 2, Nov. 1, 1998], we listed an incorrect URL for WebPosition Gold. The correct URL is www.webpositiongold.com.



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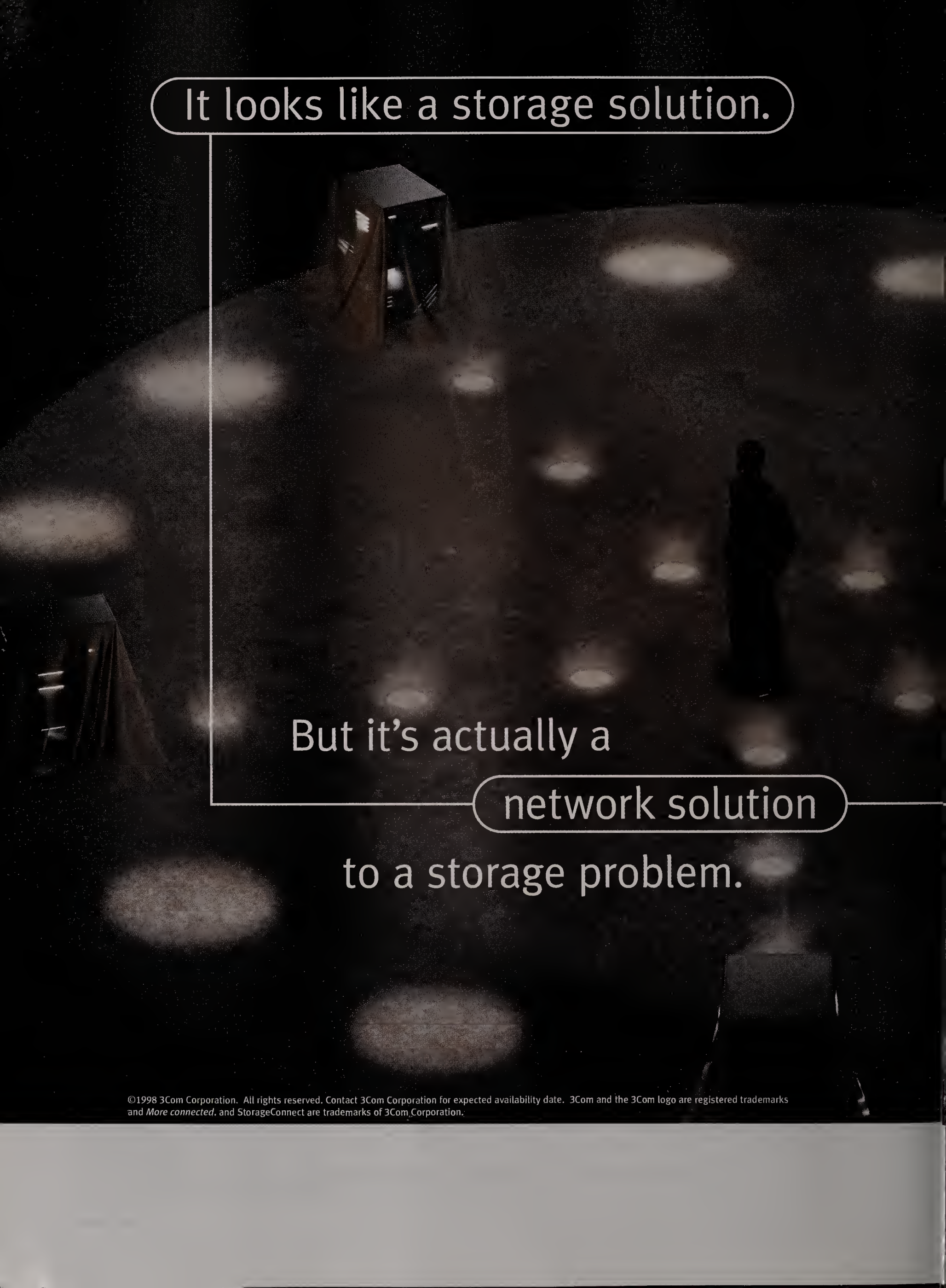


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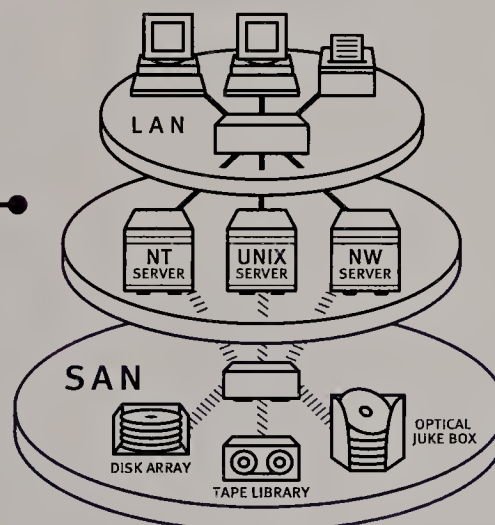
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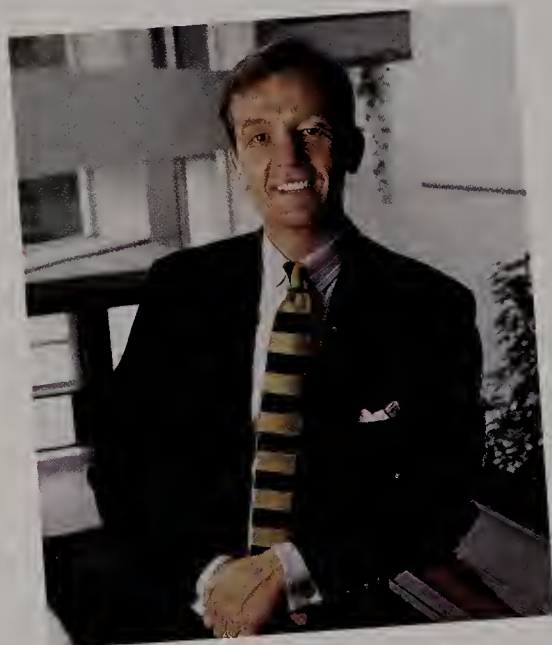


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Publisher's Note

The 22-year-old technology of the personal computer has reached its zenith, and here's why.

CIO recently purchased a new personal computer for me. It's sleeker, faster and more powerful than my old PC (circa 1996). But its most notable feature is this: It takes 35 percent longer to boot because of all the bloated software loaded on to it.



Is this progress? I find myself agreeing with Stephen Wildstrom, a technology writer for *BusinessWeek*, who wrote recently after buying a PC for his home, "I feel the personal computer is well on its way to becoming obsolete."

In my opinion, the downfall of the personal computer in corporate America began in the mid-1990s, when Gartner-Group Inc.'s concept of "total cost of ownership" (TCO) gained popularity.

TCO advocates claim the purchase price of the PC is dwarfed by the costs CIOs pay to service and maintain the machine, its software and its security.

If the automotive industry followed

the PC's TCO model, we would all be riding bicycles.

Since the introduction of the Apple II, the personal computer served businesses well, empowering millions of workers. It was the device that freed users from the autocratic attitudes of the high priests of IT.

Consider this: Did the personal computer give users too much control and freedom in how they create and manage information? Did the PC lead, in essence, to information chaos and the resulting high cost of ownership?

I predict that within three years the personal computer will cease to exist. Replacing it will be five classes of servers ranging from mobile servers to enterprise servers. In the coming decade, CIOs will move trillions of bits of information off ill-suited PCs and on to servers where it can be more efficiently managed and accessed. A plethora of low-cost, task-dedicated information-access devices will flood the market. Many will be free. Users and their departments will be charged by usage of packets of information. The first question CIOs will ask before outfitting any employee with a digital device will be, What kind of information does this employee need from the server?

There is a technology the PC is going to render obsolete—itsself. Paul Horn, senior vice president of IBM Research, said recently, "The personal computer is too complicated and will fragment into pieces." I can hear those pieces falling to the floors of corporations across America and around the world.

Can you? Does the personal computer have a future in your corporation? What is it? Send me an e-mail.

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In My Opinion

We live in exciting times. The Internet, outsourcing and partnerships define 1998 for CIOs and other business executives.

I agree with Oracle Corp. Chairman and CEO Larry Ellison: The Internet has changed everything. Oracle recently unveiled a project to deliver the world's first Internet database as part of turnkey packages for running Internet business applications. These preconfigured Internet business servers will run on industry-standard hardware to help organizations of all sizes

lower computing costs without the complexities of general-purpose operating systems.

Oracle's goal—to simplify a company's systems by consolidating business data onto large servers for easy management, global Internet access and higher-quality business information—should be invaluable for reducing both computing costs and complexity.

Today CIOs must consider outsourcing to achieve corporate goals. Banc One Corp. entered into an interesting alliance with AT&T Solutions and IBM Global Services with long-term contracts at a total value of approximately \$2 billion.

Under a six-year, \$1.4 billion contract, AT&T Solutions assumes management of Banc One's voice and data networking requirements, transforming the corporation's legacy communications networks to a single, state-of-the-art, Internet-protocol-based networking platform.

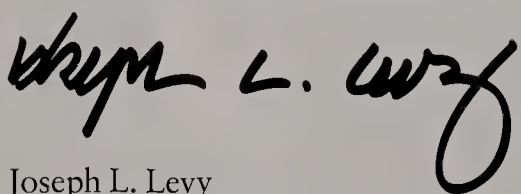
In a key demonstration of partnering, according to Rick Roscitt, president and CEO of AT&T Solutions, AT&T will leverage strategic supplier relationships with Lucent Technologies Inc., Cisco Systems Inc. and other leading vendors to ensure that Banc One's communications technology remains leading-edge throughout the contract.

The goal of this alliance is to enable Banc One to respond quickly and pointedly to growth opportunities through a more cost-effective and responsive consolidation of networking and IT infrastructure to create a virtual IT enterprise.

As we enter the new era of digital commerce, CIOs face challenging and complex demands. Responsiveness and effectiveness are key goals for CIOs in the near future.

As always, I'm eager to hear your thoughts on the importance of the Internet, outsourcing and partnerships as well as on the evolving role of the CIO.

Best wishes for a happy and healthy holiday season.



Joseph L. Levy
President, CEO and Group Publisher
jlevy@cio.com

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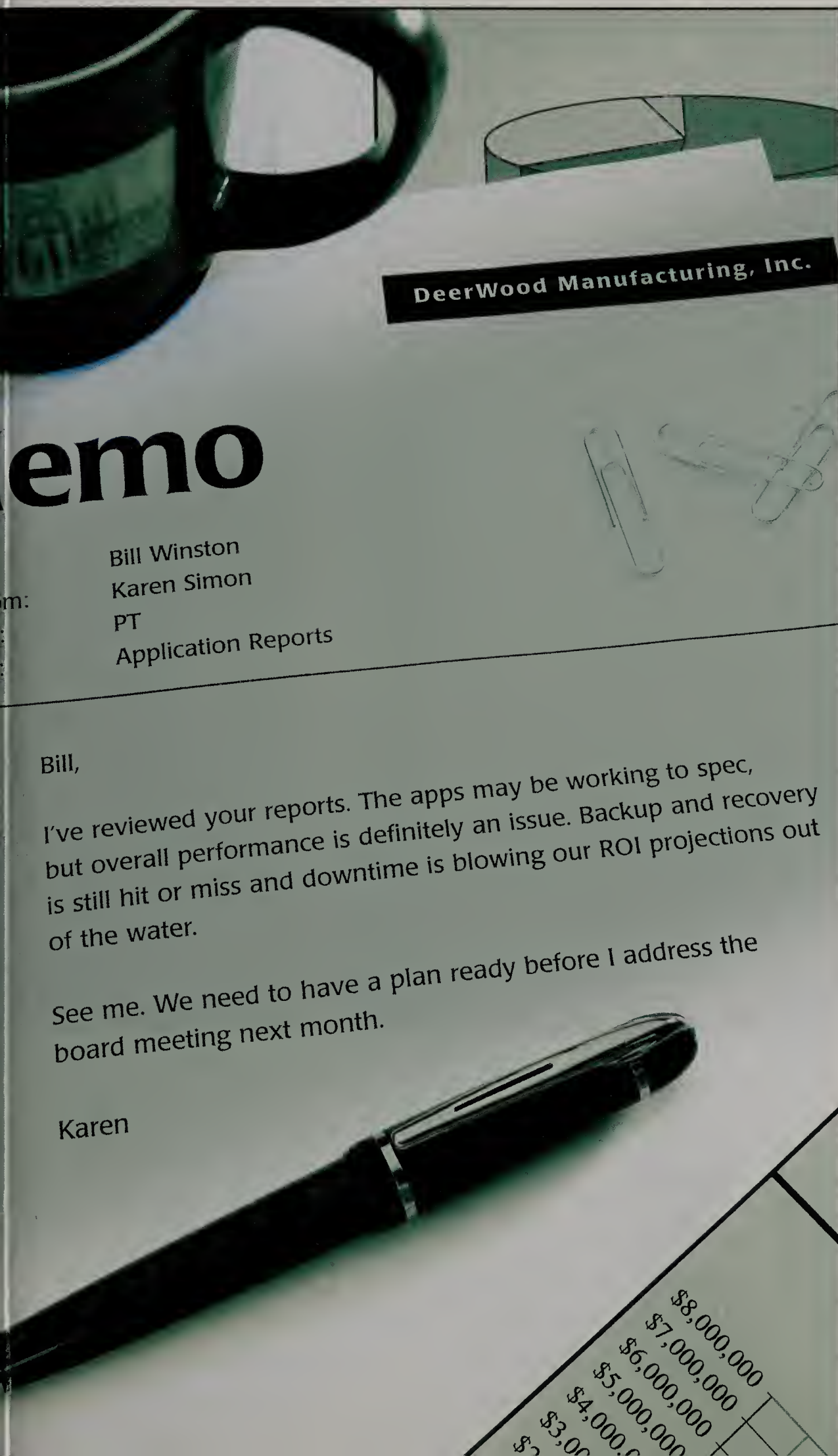
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Bill,

I've reviewed your reports. The apps may be working to spec, but overall performance is definitely an issue. Backup and recovery is still hit or miss and downtime is blowing our ROI projections out of the water.

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Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Katherine Noyes

Finding a Mate

CORPORATE MATCHMAKERS Finding a compatible partner can be as difficult in business as it is in life. And just as people turn to computer dating services for help in finding that perfect someone, companies can use computers to find the partner that best suits them.



"Companies looking for a partner often don't know how to select one," says Barbara Lewis, president of Centurion Consulting Group in West Los Angeles, Calif. Evaluating financials is important, but that reveals only part of the story. "There are all sorts of factors to consider, including culture, market scope, product compatibility and operational strengths and weaknesses," Lewis says.

To help companies make more informed partnership choices, Centurion developed the Strategic Partnering Model (SPM), a PC-based application designed to highlight the strengths and weaknesses of potential partners. Executives from companies mulling over a potential strategic partnership take turns rating and ranking each other's strengths and weaknesses

through surveys. Centurion then evaluates the survey results and enters the information into the SPM. The ratings that result are represented in color-coded graphics, with red indicating a weakness, yellow average and green a strength. "When you're evaluating a candidate, you're looking to take your reds and yellows and complement them with [a potential partner's] greens," says Lewis. For more information, call Centurion at 310 443-4115.

If you're looking for a marketing partner to expand company reach, visit the corporate personals page at PepperCom Inc. (www.peppercom.com), a New York City-based public relations firm. Fill out the Web-based form on the site, and PepperCom will suggest three "like-minded organizations" that have also submitted inquiries. According to Managing Partner Steven Cody, PepperCom then takes care of hammering out the details of any marketing partnership that results.

—Megan Santosus

Go Where the People Are

REVERSE RECRUITMENT The state of Minnesota has enjoyed the prosperous economy of recent years but not universally. While much of the state had less than a 5 percent unemployment rate, that figure was approximately 50 percent for the Red Lake band of the Chippewa tribe in northern Minnesota. That's high, but not high enough for individuals on the Red Lake reservation to be exempted from the five-year lifetime limit on assistance from the Welfare Reform Law of 1996. "With the Welfare Reform clock ticking, we had to become innovative and do something new," says Red Lake Tribal Chairman Bobby Whitefeather.

Meanwhile, about 35 miles away in the town of Blackduck,



ILLUSTRATION ABOVE BY MARTIN MATJÉ; BELOW BY SCOTT MATTHEWS

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Trendlines



Anderson Fabrics Inc. was facing a staffing crunch. The privately held contract linens manufacturer and distributor is the largest employer in

the small town of Black-

duck—it employs more than half the town's population of about 750—and the largest private employer in rural Beltrami county. "We could easily use another 50 employees, but we're having a hard time finding them," explains Ron Anderson, president of Anderson Fabrics.

Past efforts to recruit tribal members to work in Blackduck had met with limited success. "The labor force is extremely talented, but getting them here for a 40-hour week is the tough part," says Anderson. "There are a lot of obstacles," Whitefeather agrees. "Like a lack of reliable transportation or child care, very cold weather and so on."

The solution? Whitefeather and Anderson decided to try bringing the jobs to the workers. Specifically, they decided to open an Anderson Fabrics plant right on the reservation.

The main crimps in that plan were the Tribal Council's lack of resources and Anderson's uneasiness about the complicated legal horizon presented by Indian nations' sovereign immunity. The federal government has limited jurisdiction on the reservation, and Red Lake is also one of two "closed reservations" in the country, which means all land is

jointly owned by tribe members. An entity like Anderson Fabrics could not get clear title to property there.

However, with municipal bonds and grants from several regional and national development corporations and agencies, plus a contribution from the tribe, the reservation got the funds to build an Anderson plant itself as well as a vocational training

and child-care center. The tribe will buy all the plant materials and inventory; Anderson will handle management and marketing, at least to begin with. Ultimately, the tribe hopes to run the operation independently, Whitefeather says. He hopes construction on the new plant will begin in 1999.

—Sandy Kendall

Limbering Up

INTERVIEW

Adaptability is one of the key features of the organic company. But how do you achieve it? Chuck Martin is chairman of the Net Future Institute, a think tank in North Hampton, N.H., as well as author of two books about the future of the Internet and its role in the evolution of the business world (*The Digital Estate*, McGraw-Hill, 1996, and *Net Future*, McGraw-Hill, 1998). *CIO* asked him about his view of how the Internet can help companies be more adaptable.

Q: What role will the Internet play in creating flexible companies?

A: A lot of companies think they can just extend their business onto the Net. That's a failed idea. The growth of the

"wired consumer" is going to be explosive, but it's just the tip of the iceberg.

What's happening is the three Nets—Internet, intranets and extranets—are coming together. You have the Internet extended to your customers. You then open up your database—to your intranet—to customers and become an open book corporation, as Federal Express Corp. and Office Depot Inc. have done. Now you're going to have customers drive the business. Companies used to be aggregators of supply, but now you are becoming an aggregator of demand, checking the pulse of the customer in real-time. So next you go all the way back to your extranet because you need to link to your suppliers in real-time, like a Dell Computer Corp. kind of model. Everything has to get linked together.

The ultimate effect is that there is no waste in



PHOTO BY MARK WILSON

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Trendlines

the value chain. Product is driven by the customer, not by the company. As a result, the value of the core product starts to shift as well. The services, not the product they surround, may be most important. For example, Amazon.com is not about the book, it's about the services—recommendation systems, the ease of not leaving your house and so on.

Q: Whose job is this (as if we didn't know already)?

A: Ultimately, it's going to come under the CIO. The three pieces have been split up. The Internet was put under some New Media guru; the intranet was put under the CIO architecturally as a way to save money; and then the business units were doing their thing with extranets for procurement and so on. But those people don't have the core competency to deal with big data security issues and customer billing issues. The CIO is the one who can reconcile all this.

Q: What's the first step today?

A: CIOs can start by [helping their companies] not think about the Internet in terms of Web sites. Businesses keep thinking, "What else should we put on our Web site; we need some more pages up there," when really they should be thinking about how they can tie the whole business together electronically. That's the challenge and the opportunity.

—Derek Slater

Off the Shelf

Recommended Reading

YOU DON'T HAVE TO READ Charles Darwin's *The Origin of Species by Means of Natural Selection* to bone up on how adaptive behaviors lead to longevity. There are several books that take Darwin's adaptive theories and apply them to business survival.

Start with *Bionomics: Economy as Ecosystem* by Michael Rothschild (Henry Holt and Co. Inc., 1990). In this book, Rothschild displays an amazing breadth of knowledge about evolutionary forces both in nature and in economics. The ground Rothschild covers ranges from the evolution of the now-extinct trilobites to the invention of the atmospheric engine. Along the way, he uses natural evolutionary phenomena to explain why businesses and governments succeed or fail. Although some material in the book is dated (feel free to skip over the chapter about Japan's economic superiority), Rothschild does a wonderful job of making the connection between biology and business.

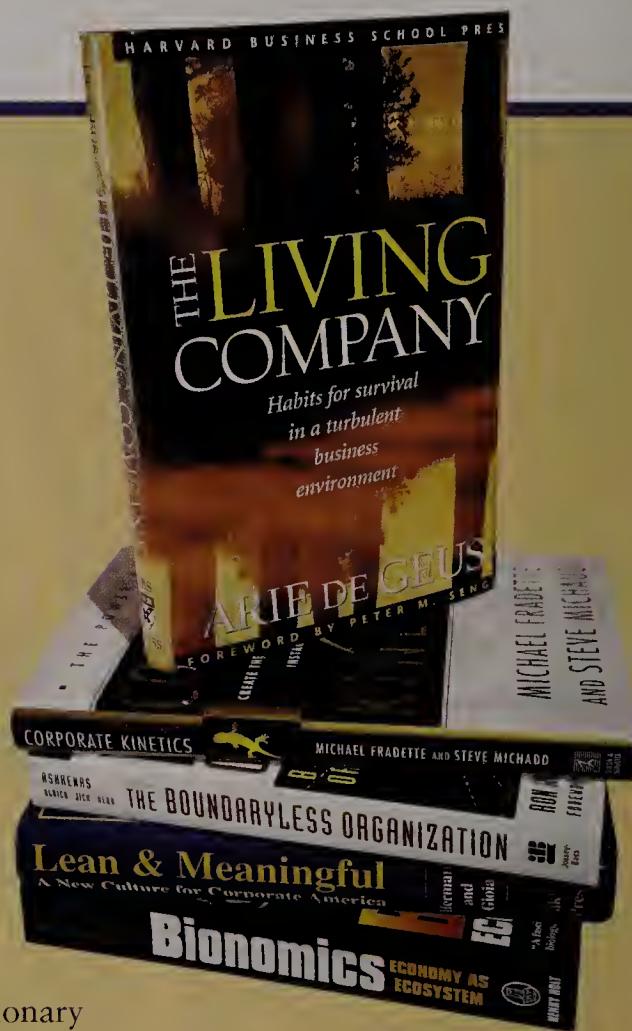
While an executive at Royal Dutch/Shell Group, Arie de Geus set out to study companies that have withstood the test of time. De Geus turned his research into *The Living Company* (Harvard Business School Press, 1997), an informative book that explores why some companies (the 196-year-old DuPont Co. and the 700-year-old Swedish company Stora among them) live long and prosper while the majority of Fortune 500 companies wither and die within 50 years. De Geus's book is an enjoyable read and provides a solid introduction to the concept of managing companies in an organic manner.

Deloitte Consulting partners Michael Fradette and Steve Michaud present some terrific real-world case studies of organic enterprises in their book *The Power of Corporate Kinetics* (Simon & Schuster, 1998). Using companies like Kinko's Inc. and Deere & Co. as examples, the authors show how companies that take a kinetic or organic view of life innovate and make decisions. And despite their day jobs as consultants, the writing is mercifully free of buzzwords and arcane hyperbole.

A good primer on the evils of corporate hierarchy can be found in *The Boundaryless Organization* (Jossey-Bass Inc., 1995), a multiauthored tome by Ron Ashkenas, Dave Ulrich, Todd Jick and Steve Herr billed as a blueprint for building tomorrow's organization. In addition to debunking traditional corporate structures, the book delves into the destructive nature of turf wars and insular thinking.

Finally, for a perspective that focuses entirely on the human components of organic companies, pick up *Lean & Meaningful: A New Culture for Corporate America* (Oakhill Press, 1998) by Roger E. Herman and Joyce L. Gioia. The authors explore what employees want in an employer, both in terms of benefits (like retirement plans) and atmosphere (like a family-friendly environment). The book also includes an extensive list of resources.

—Megan Santosus



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They Believe In Yesterday

BUSINESS HISTORIANS Want to know the truth about your company's past—warts and all—and uncover the successes and failures of yesterday that made your business what it is today? Hire a historian.

As business executives increasingly find value in improving their historical perspective (see "A Sense of Who You Are," Page 80), they are turning to professional business historians who know what to look for, who to ask and how to present the best lessons learned. "History allows us to reinterpret the past in a way that's relevant today—it helps us learn from the mistakes and successes of the past," says Glenn Bugos, principal historian at The Prologue Group, a Redwood City, Calif.-based firm that specializes in helping companies create historical narratives.

Established in 1986, The Prologue

Group (www.prologuegroup.com) is but one of several history consultancies dedicated to helping businesses delve into their pasts. Others include History Associates Inc. (www.historyassociates.com) in Rockville, Md., the Winthrop Group Inc. (www.winthropgroup.com) and Reflection Learning Associates Inc. (www.fieldbook.com/rlearning.htm), both based in Cambridge, Mass. These consultants are hired mainly to help companies write their corporate histories, whether for a specific anniversary celebration or for other marketing purposes. But often historians are brought in to help establish or organize corporate archives so that today's exec-

"My favorite companies have no HR department."

—Jeffrey Pfeffer, professor of organizational behavior, Stanford University Graduate School of Business

utives can benefit from their forebears' wisdom—or folly. Bugos cites the example of Wells Fargo & Co., the San Francisco-based financial services company, which hired and retains a professional archivist to help steep new employees in the 146-year-old company's colorful history. "The only way to do that is through stories," Bugos says. "And all companies have these stories."

What's the advantage of hiring an outsider to do an inside job? Objectivity. Historians don't care whether particular events paint a company in a favorable light; they care only that the events occurred. To uncover these milestones, historians will go not just to the "official" sources but also to the "unofficial" ones offered by bit players and supporting documents. Records management is another benefit. Unlike a corporate pack rat, a trained archivist knows which records to keep and





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 MICROGRAPH

SUNDAY, JANUARY 31

Registration and Breakfast

Golf Tournament at La Paloma Country Club

Transportation to La Paloma Country Club will run continuously starting at 10:30 a.m. from the main entrance of the Westin La Paloma.

Registration

Retreat Welcome

JOSEPH L. LEVY, *President, CEO and Group Publisher*
CIO Communications, Inc.

Retreat Introduction

F. WARREN MCFARLAN, *Senior Associate Dean,
Director of External Relations,
Albert H. Gordon Professor of Business Administration*
Harvard Business School

Retreat faculty will open the program and set goals and objectives.

Partners' Café Reception

Meet other participants and Retreat Partners in an informal living room setting.

MONDAY, FEBRUARY 1

Opening Remarks and KnowPulse PollSM

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Information Application Targets for the Early 21st Century

F. WARREN MCFARLAN

Discover the ways information technology will be applied in the next century.

Partners' Café Reception

TUESDAY, FEBRUARY 2

New IT-Enabled Organization Structures and the Roles of Intranets and Extranets

F. WARREN MCFARLAN

Examine ways new channels of communication evolve the structure of organizations.

Case Study: Pioneer Hi-Bred

F. WARREN MCFARLAN

Explore the business and technology issues facing this \$2 billion global seed company.

Case Study Workgroups

Participants will break into small groups to analyze the case.

New Paradigms for IT Service Sourcing

F. WARREN MCFARLAN

Observe the major shifts in access to unconventional IT service sourcing.

Enterprise Value Awards Reception

Meet the Awards winners.

Enterprise Value Awards Ceremony and Dinner

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ABBIE LUNDBERG

Editor in Chief

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LEW MCCREARY

Editorial Director

CIO magazine

WEDNESDAY, FEBRUARY 3

KnowPulse Poll Results

LEW MCCREARY

Case Study Workgroup Presentations and Discussion

JOHN JAMES

Senior Vice President

Pioneer Hi-Bred

THOMAS HANIGAN

Vice President and Director of Information Management

Pioneer Hi-Bred

F. WARREN MCFARLAN

Groups will present and discuss their solutions with Pioneer Hi-Bred executives.

Case Study Epilogue and Reflections on Pioneer Hi-Bred

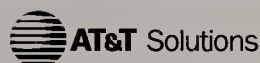
The case study company executives respond to breakout group solutions.

Delivering IT Results in the Information-Mediated Age

F. WARREN MCFARLAN

Summary

F. WARREN MCFARLAN



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- ☐ Evaluate brands

- ☐ Specify/recommend brands or vendors
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PRODUCT REVIEW

Optimizing Human Resources: Best Practices in Hiring, Training and Retaining IT Talent is the most comprehensive and organized presentation of ideas for managing IT human resources I have seen anywhere. It is clearly written and presented; includes graphics that are understandable and suitable for presentations; has analyses that focus squarely on the issues; and it provides information and resources you can take action on immediately. With today's staffing challenges, this CIO ConsultWare product really belongs in the hands of IT executives everywhere. We may not be able to fix the IS staffing crisis, but at least with products like these, we can level the playing field considerably."

Angelo Privitera
CIO
HDR, Inc.

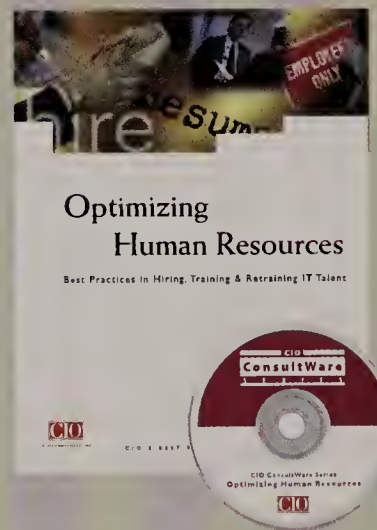
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CIO ConsultWare is produced jointly by CIO Communications and ICEX, an independent research firm.



Trendlines

which to discard. "A good historian-archivist-records keeper can save a corporation 10 times his or her salary over five years just through better records management," boasts Philip L. Cantelon, president and CEO of History Associates.

One caveat, though, to business executives who are used to buying specific deliverables from their consultants: History isn't a product. Says Bugos, "It's the process of asking questions that counts, not just finding the answers." —Tom Field

Organic Online

While we cover a lot of ground about the organic enterprise in this special issue of *CIO*, there's more information to be had on the topic. Visit our Web site at www.cio.com for additional information as it relates to each feature article. For example, the online version of the overview article, "The Organic Root System" (see Page 38), includes a reading list of books and links to articles that explore the topic of organically inspired organizations in general. Click on the Web version of Gary Abramson's story "From the Ashes" (see Page 56) for a list of books that delve into corporate turnarounds and transformations.

In addition to book lists, you'll find audio interviews, Web sites and articles from the *CIO* archives as well as other sources. Also available online is an interactive version of our "Pop Quiz" (see Page 48) where you can find out how you stack up to other online quiz takers.

Definitions

Ah, Life!

The organic company is alive...but what exactly does that mean? Here we check out a variety of definitions.

"Life is any form in which mutually interdependent parts maintain the various vital processes necessary for life to exist."

—Academic Press Inc.

"A tale told by an idiot—full of sound and fury, signifying nothing."

—William Shakespeare

"A state of physical entities that can reproduce itself and which utilizes substances derived from outside itself for the purpose of growth, the repair of its own structure and the maintenance of its function systems."

—P. J. Webber (Missouri State University)

"Just a bowl of cherries. Don't take it serious; it's too mysterious."

—"Life Is Just a Bowl of Cherries," lyrics by Lew Brown,
music by Ray Henderson (1931)

"Like a box of chocolates...you never know what you're gonna get."

—Forrest Gump

"An organismic state characterized by capacity for metabolism, growth, reaction to stimuli and reproduction."

—Websters Dictionary

"What happens while you are making other plans."

—John Lennon

"[What] some believe may emerge from complex logical interactions within a computer."

—Peter Coveney and Roger Highfield in *Frontiers of Complexity: The Search for Order in a Chaotic World* (Bantam Books, 1995)

—Perry Glasser

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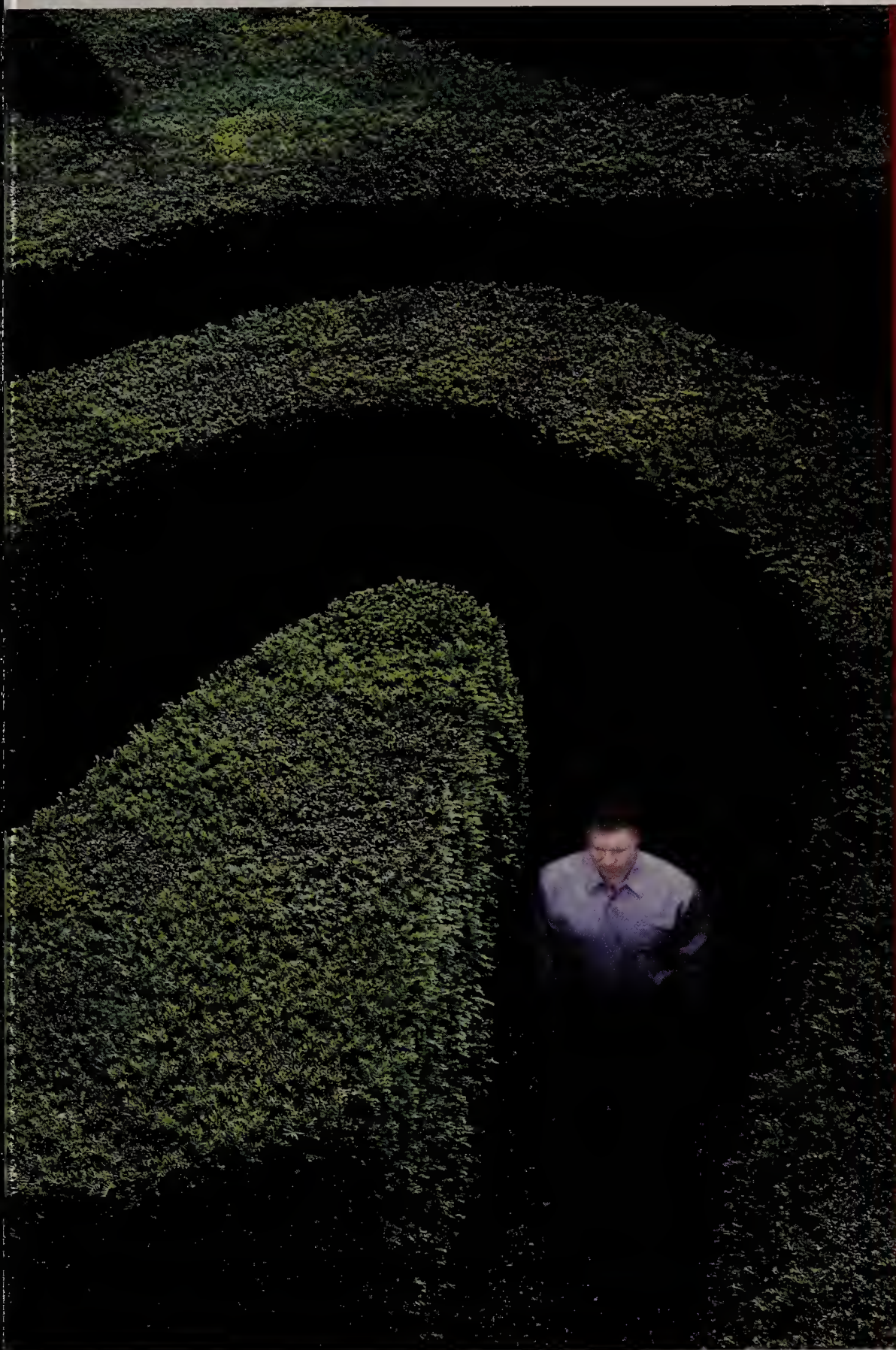


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THE ORGANIC ROOT SYSTEM

When cold statistics and systems thinking threaten to cloud your judgment, remember this simple key to a long-lived business organism: People and culture count most.

BY MEGAN SANTOSUS

A COUPLE OF YEARS AGO, I ATTENDED MY FIRST-EVER trade show devoted solely to the Internet. As is typical when my name gets on a press list, I was inundated with calls the week or two before the show. Vendors—most of which I'd never heard of—wanted to tell me all about their products and strategies. Since the Internet was like an undiscovered country to me, I decided to accommodate as many vendor requests as I could. That resulted in one visit every half hour with a 45-minute lunch break. Big mistake.

After five hours of trudging back and forth among 20 or so booths—accumulating more vendor graft and tschotkes with each step—I arrived at my final visit, behind schedule and hobbled by blisters. I explained my predicament to the guy I was meeting, and he offered a brash prediction: “Don’t worry,” he said. “Most of these companies won’t be here next year. Their entire reason for being is to sell out to Microsoft and disappear.”

READER ROI

Nothing lives forever, and that includes business organizations. But longer-lived enterprises share some virtues that contribute to increased longevity. Readers of this overview article will learn

- ▶ How employee self-interest can be harnessed to produce enterprise benefits
- ▶ How organic structures convert external feedback into fluid plans of action
- ▶ Why investing in the growth of people’s knowledge is the best guarantee of long-term survival



Many of the companies at the show have gone the way of the Great Auk either by design or blunder. (And at least one of the companies I visited—Vermeer Technologies Inc.—was indeed bought by Microsoft.) While there's nothing wrong with planned obsolescence, most companies don't actively pursue a strategy that leads to their own extinction. It's not just human nature that dictates self-preservation; the natural laws of all organic systems are geared toward prolonging life and leaving behind a legacy. Making a fast buck may be a thrill, but nothing has cachet like staying power.



COMPANIES, LIKE ANY SPECIES, are organic entities whose survival requires carving out a territory within a dynamic ecosystem. They are not—as some executives and consultants claim—machines that can be reengineered, reorganized or reprogrammed. “Fundamentally, organizations are complex, intelligent social organisms,” says Michael Rothschild, author of *Bionomics: Economy as Ecosystem* (Henry Holt and Co. Inc., 1990) and founder and CEO of Maxager Technology Inc., a software company in San Rafael, Calif. “They do evolve, adapt, change, learn and grow over time depending upon what’s going on in their environment and what’s going on with technology.”

Companies also die, usually well before their time. In his book *The Living Company* (Harvard Business School Press, 1997), Arie de Geus says that the average life span of Fortune 500 companies is only about 50 years. The reason they don't live up to their potential, de Geus argues, is because most companies have a heavy economic bent rather than an organic one. In other words, de Geus believes, companies are so focused on turning a profit that they effectively shut down any feedback mechanisms that could promote learning and growth.

Among the handful of companies that predate the Industrial Revolution is E.I. duPont de Nemours & Co. (DuPont Co.), which started off as a purveyor of gunpowder in 1802 with a market cap of \$36,000. Over the course of nearly two centuries, DuPont grew to a diversified powerhouse with 1997 sales of \$45 billion in industries ranging from specialty chemicals to petroleum products. DuPont didn't achieve that kind of transformation by snoozing at the buckboard while frontier society gave way to an agrarian economy, which was itself surpassed by an industrial one. As befits one of the world's oldest continuously operating companies, DuPont has mastered the art of survival by adapting and changing.

In the present rough-and-tumble climate, however, time for steady-state adaptation is a luxury most companies no longer enjoy. With the Internet and other technology advancements—not to mention their distant cousins, globalization and deregulation—the business environment changes seemingly overnight. Add in the all-too-human trait of clinging to the familiar—whether it be tried-and-true business strategies or outdated corporate vision statements—and longevity becomes at best a dicey proposition.

Consider a recent study by Opinion Research Corp. International of Princeton, N.J. The study concluded that the Internet has quickly propelled a handful of companies (including Amazon.com Inc., Yahoo Inc. and America Online Inc.) into “household name” status (defined as meaning that 50 million or more American adults recognize them by name). By contrast, it took McDonald's Corp. and The Coca-Cola Co. decades longer than their virtual counterparts to achieve this magic benchmark.

In the Web-speed universe, companies need to be quick-change artists of the highest order just to stay in contention.

But achieving such fluidity is no mean feat. Companies court trouble when they try to impose adaptive strategies from above. As organic entities, survival instincts should rise up from within the ranks. True, there are times when radical change is in order—usually in response to an internal crisis allowed to fester too long or a cataclysmic change in the external environment; under such circumstances, an adaptive strategy is necessarily handed down by fiat.

But if adaptive behaviors are to take root, companies need to sustain an environment in which employees are motivated to do things differently and to take responsibility for making decisions. Employees, after all, are the people most likely to meet and talk with customers on a regular basis, to work closely with suppliers or to manufacture the products. They know as well as or better than anyone else what problems hamper service and what opportunities go begging. The problem with many top-down strategies is that they don't grow out of the active participation of employees. And adaptation is less a matter of corporate mission statements and processes than of human behavior.

Michael Fradette, a partner at Deloitte Consulting LLC in Boston and co-author of *The Power of Corporate Kinetics* (Simon & Schuster, 1998), points to farm-equipment manufacturer Deere & Co., of Moline, Ill., as an example of the

“TRUST BETWEEN EMPLOYEES
AND MANAGEMENT ENABLES
LIVING COMPANIES TO FOCUS
ON THE LONG TERM.”

—Arie de Geus

power of giving employees responsibility. In his book, Fradette recounts the story of a Deere salesman who encountered a farmer who wanted to plant a new corn hybrid, which, because it had to be planted in tight rows, couldn't be handled by Deere's existing equipment. The salesman took it upon himself to get new specifications from the customer. He then transmitted the specs to Deere's factory, which built a customized planter within 16 hours of receiving the order. By giving employees the ability to respond to what Fradette calls “customer events,” Deere has in effect changed the behavior of its company, from the line employees to the executive ranks.



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COMPANIES LIKE DEERE have glommed on to an important survival tip: Long-term, sustainable adaptability derives both from speed and from a self-organizing capacity. The ability to interpret broad marketplace trends, anticipate what customers want and expand beyond traditional markets equips businesses to rise to the top of the food chain. Such companies are organic in that they are able to process continuous feedback and signals from the environment and convert such information into fluid plans of action.

While successful companies have always exhibited a knack for adaptation, the relatively new emphasis on speed changes the cornerstone on which most organizations are built and managed. "The old corporate way of doing business is based on an ability to predict what customers want, create a plan around those predictions, build an infrastructure and execute," says Fradette. "Now, companies just don't have the time to do extensive market research. And even if they did, they'd be wrong."

Like successful species, successful companies exhibit behaviors that enhance their chance at survival. De Geus, a former Royal Dutch/Shell Group executive and now a visiting fellow at the London Business School, studied enduring companies such as DuPont and found that long-lived organizations—irrespective of industry or national origin—share a surprising number of characteristics that have enabled them to change and thrive with the times. Among the most important, de Geus believes, is a focus on learning and an overriding sense of community, identity and purpose. "There's a tremendous element of trust between employees and management that enables living companies to focus on the long term rather than on next quarter's profit figures," de Geus says. With knowledge replacing capital as the critical success factor in today's economy, de Geus says, companies need to make investing in their employees the top priority. That means continuous training and development, giving employees an ownership stake and paying more than lip service to the notion of community.

Unfortunately, management practices at most companies haven't crawled very far out of the protozoan stew. "Most companies are still anchored in the Industrial Age, organized in a hierarchical way and managed by command and control," de Geus says. Along with the hierarchical perspective, he says, comes a dependence on seeking advantage through cost-cutting, long-range strategic planning and time-honored HR policies that reward employees based on tenure rather than on other more relevant value metrics.

Trust is a squishy proposition. Yet de Geus makes sense when he highlights the gap between talk and walk. Companies often talk up the power of knowledge and the primacy of their people, but they still operate in a manner reminiscent of the hoariest org chart. When it comes to forging a strategy, executives still default to market research or last month's financial reports. Employees are told that their ideas are valued but find that no action ever seems to result from their input. In the event of a crisis, many executives still turn to outside consultants to come in and reengineer processes.



ORGANIC ENTERPRISES ARE DIFFERENT. The essence of acting organically is continuous learning but not in the way that most companies go about it. Forget about static training classes or personnel development programs. At organic companies, the entire business ecosystem—encompassing customers, competitors, suppliers and other industries—is one huge classroom.

One of the best tools for promoting learning throughout an organization is information systems. Unfortunately, many IS departments are similarly wedded to Industrial Age thinking. In order for people to learn, the information they receive must be actionable. All too often, IS is concerned with churning out reports chock full of information that no one can act upon. Just what are line employees supposed to do about last month's sales figures? Wouldn't it be better to provide employees with real-time information they could use to change processes as they happen rather than in hindsight? In providing such real-time systems, CIOs have an opportunity to facilitate the individual learning that forms the foundation of organic companies.

While executives do keep an eye focused on the marketplace, they spend more time listening to the employees who actually work with customers and interact with suppliers. And listening is not just a token activity. Organic companies rely on feedback mechanisms to continually absorb new ideas from their front lines and turn the best of them into action or new products.

According to Deloitte's Fradette, a copy-machine operator at one of Kinko's stores had an idea: Why not use Kinko's color copying technology to create custom calendars from customers' photographs? The operator went ahead and produced the calendars in the store with great success. Instead of sitting on the idea, the operator called Kinko's founder and chairman Paul Orfalea and left a message explaining the calendar concept on his voice mail. Orfalea in turn used the voice mail network to let managers across the franchise in on the idea. Today, says Fradette, custom calendars are a hit in Kinko's 800 stores around the world.

The same idea would get lost in a company that operates in the chain-of-command mode. More likely, such an idea would never see the light of day in the first place. In order for employees to go out on a limb by coming up with new products or services, there has to be a permissive culture that allows ideas to bubble up. There must be permission to innovate, to make intuitive decisions. Most important, there also needs to be permission to miscalculate and fail.

Such a culture flies in the face of those found at hierarchical, rules-bound companies.

It's not that the majority of executives are control freaks;



restrictive attitudes are the result of basic distrust. Executives don't believe their employees would act in the best interest of the company, so they feel the need to dictate every action and deed by applying stringent rules to every function. And that's where things get insidious. By keeping employees on the managerial equivalent of a very short leash, executives create—whether intentionally or not—a culture that exudes mutual distrust from every fiber of its being.

Organic companies know that there's an implicit contract between employer and employee. As in nature, species don't survive because their individual members have an overriding sense of altruism. They survive by acting in their own interest. Employees are no different. If they have nothing to gain by coming up with a new idea, going out of their way to solve a customer problem, collaborating with a colleague or sharing information with a supplier,

they simply won't do it. Self-organizing companies like Kinko's instinctively know this; that's why, says Fradette, employee compensation should be directly linked to company performance.

Linking pay with performance is only one tool organic companies use to motivate employees. More important is hiring employees who are

motivated to begin with—those who are comfortable with risk-taking and can happily link their fates with that of their employer. Consequently, hiring practices that emphasize attitude and aptitude over demonstrated skills are the first steps to hiring an organically inclined workforce. The need for specific skills—particularly in programming languages or manufacturing techniques—changes too rapidly for static skill sets

to have much relevance. Fradette singles out Microsoft Corp. and Southwest Airlines Co. for their adroitness at hiring for attitude and innate intelligence rather than for direct industry experience.

"Once you get these people, there's a lot to do to transform them into what I call kinetic workers,"

he says. Among the methods he suggests are setting up corporate universities and moving employees in and out of different roles. What it all comes down to, says Fradette, is companies investing in employees just as they invest in capital equipment and other assets.

Unfortunately, a lot of executives don't think of employees as assets worthy of investment. And that's too bad. Because for those who can't make the required attitude adjustment, the prospects for long-term survival are grim. **CIO**

Features Editor Megan Santosus can be reached via e-mail at santosus@cio.com.



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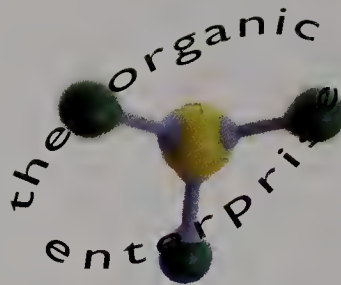


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POP QUIZ!

Where does your company measure up
on our Organo-Metric Index?

BY MEGAN SANTOSUS

THERE'S NO CONCISE GUIDE FOR THRIVING IN TODAY'S ECONOMY. After all, how do you plan strategy and plot competitive advantage when the ground beneath your corporate headquarters is constantly shifting?

In the absence of Cliff Notes for executives, here are a few basic premises: The Industrial Age is out, the Information Age is in. Intangible knowledge is more important than physical capital. Geography and size no longer rule. And the only sure-fire predictable thing about business is that nothing is sure-fire predictable anymore. If this paints an accurate picture of your business environment, then you've just taken the first step toward thinking of your business as a living, organic enterprise.

Thinking organically is one thing, but *acting* organically is what separates market leaders from market laggards. As with any biological organism, the key to long-term corporate survival—to say nothing of dominance—is adapting to the surrounding environment. And adaptability manifests itself both physically and behaviorally. In other words, shedding a physical presence by going virtual is one component of adaptability. In many respects, it's an easy leap to make because the benefits of doing so are inherently obvious. Running an Internet-based retail operation is cheaper than leasing 300 storefronts in malls around the coun-

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IT executives are assuming radical styles of human and information management and resource prioritization to meet the chaotic demands of the 21st century. Much like a battlefield triage surgeon, executives are increasingly forced to cut their losses and abandon otherwise important projects and systems to save those that are absolutely vital to the life of the entire enterprise.

While recently witnessing some of the largest winner-take-all business acquisitions and mergers in history, CIOs have repeatedly struggled to attract, retain and re-train competent IT staff, develop tenets of IS security to protect systems against sabotage, recover from crippling natural disasters, and diligently prepare for the most imposing and unavoidable IT deadline in history.

Although risks associated with each of these emergency situations have steadily increased, the timeframe to formulate sound contingency planning has proportionately shrunk. As a result, the predictable and proven methods no longer apply; and in order to preserve the sanctity of the enterprise, business and IT executives must be prepared to ad hoc evaluate, prioritize, juggle — or abandon — each critical situation in a constant state of readiness and often with extreme prejudice.

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Keynote presenter **Nicholas Negroponte**, founder and director of MIT's Media Lab and author of *Being Digital* will discuss what we'll face in the digital future. Keynote presenter **Robert Fulghum**, author of *All I Really Need to Know I Learned in Kindergarten* and *Words I Wish I Wrote* will offer a humorous yet pensive approach to maintaining balance in one's life. **James C. Wetherbe, PhD** will once again moderate the conference.

During the General Sessions, **Joseph Morone**, president of Bentley College, will discuss new IT-driven curriculum within its MBA program. **Irene Dec**, vice president of information systems and Year 2000 program manager for Prudential Insurance Company, will explore the approaches and processes implemented at Prudential as a result of its Year 2000 project. The CIO of the Coast Guard, **George Naccara**, will discuss the CG's 21st Century IT management vision of providing seamless, instantaneous, secure and reliable information to support all CG missions.

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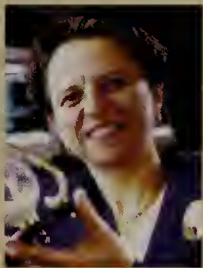
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This fee applies if you hold a sales, marketing, new business development or consulting position, including executive management of IT vendor and consulting companies. This fee is payable by company check only. CIO will make the final determination of this category.

OTHER ACTIVITIES:

☐ **COMPANION PROGRAM = \$325**

Companions must be enrolled in this program to attend any conference-related functions. Includes all scheduled meals, receptions, entertainment, companion breakfast, a stretch and tone class, and planned companion activities. Conference session attendance is not included.

☐ **I am not staying at the Arizona Biltmore**

Name of alternate hotel

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HOTEL ACCOMMODATIONS

A block of rooms has been reserved at the Arizona Biltmore. We urge you to make your reservations early by calling the hotel at 602 955-6600 and identifying yourself as part of the CIO conference to receive the conference rate. CIO will make hotel reservations for government/military participants only. Be sure to guarantee your room with a credit card, as all unreserved or unguaranteed rooms will be released on February 28, 1999. Hotel reservations, cancellations and charges are your responsibility. If a CIO conference Enrollment Form is not received within 48 hours of making your hotel reservation, your room will be released from the CIO room block.

TRANSPORTATION

American Airlines is the official conference carrier. For discounted airfare, call 800 433-1790 and reference Star File #S5539UB. AVIS is the official car rental provider. Call AVIS at 800 331-1600 and reference B766657.

ENROLLMENT FEES

All enrollment fees must be paid in advance of the meeting. Fee includes conference sessions, business briefings, corporate host displays, conference materials and scheduled meals, receptions and entertainment. Transportation, hotel and recreation are your responsibility. Please note that submission of this enrollment form to CIO obligates the attendee/ sender for the enrollment fee.

CANCELLATION

ALL CANCELLATIONS OR SUBSTITUTIONS MUST BE IN WRITING.

You may cancel your conference or companion enrollment up to February 26, 1999 without penalty. A \$250 administration fee will be imposed for cancellations between February 26 – March 12, 1999. No refund or credit will be given for cancellations received after March 12, 1999 or for no shows. You may send a substitute in your place. CIO reserves the right to decline enrollment to any registrant.

CIO

PERSPECTIVES

March 28-31, 1999
The Arizona Biltmore
Phoenix, Arizona

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Keynote Presenter

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try. More difficult is changing how corporations behave in addition to how they organize their operations. And as is the case with any species featured on *Mutual of Omaha's Wild Kingdom*, corporate behavior results from evolved characteristics, learned capabilities—and sometimes pure, unadulterated luck.

While luck can't be mastered, characteristics and capabilities can. How organically inclined is your organization? Take the following quiz to find out. And once you've figured out your score, keep in

mind that the results are not meant to be quantitative; the goal is to provoke thoughts on what it means to be an organic enterprise. (If you prefer to take a self-scoring version, visit CIO's Web site at www.cio.com/quiz99.)

Special thanks to Ron Ashkenas, managing partner of Robert H. Schaffer & Associates in Stamford, Conn., and Michael Rothschild, president and CEO of Maxager Technology Inc. of San Rafael, Calif., for their input in designing the scorecard.

Select the answer that best describes your company.

Culture and Attitude

1 Employees are considered to be

- a. the most important source of competitive advantage
- b. the most expensive costs on the balance sheet
- c. the instruments for carrying out strategies determined by top executives

2 When an idea for a new product, service or process emerges from the employee ranks, executives

- a. evaluate the idea based on its potential worth or usefulness
- b. evaluate the idea by poking holes in its validity
- c. turn the idea over to market research for further evaluation

3 Your main competitors are

- a. the companies you currently battle for market share
- b. any company—foreign or domestic—in your industry
- c. any company with a history of innovation and a knack for hiring smart people

4 Employees have regular access to

- a. all information executives deem relevant to their departments
- b. all but the most sensitive corporate information
- c. information available to any member of the executive committee

5 Communication between employees and executives

- a. is spontaneous and occurs whenever events warrant it
- b. occurs primarily during scheduled meetings
- c. occurs only during annual performance reviews

Internal Processes and Practices

6 The main source of new product and service ideas is market research

- a. always
- b. sometimes
- c. What's market research?

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7

Employees from all departments and ranks have an opportunity to

- a. meet on a regular basis
- b. work together on free-forming project teams
- c. mingle by the punch bowl at the company Christmas party

8

To foster innovation, your company primarily depends upon ideas originating from

- a. a designated R&D department
- b. employee brainstorming, project teams and the like
- c. the executive suite

9

Compensation at your company is primarily based on

- a. broadbanding—or wide salary ranges
- b. salary plus company performance-based bonuses
- c. seniority

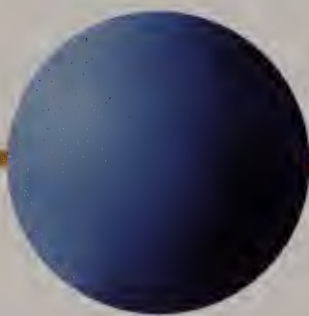
10

In the course of their careers at your company, employees

- a. expect to be transferred between two or more departments and/or jobs
- b. work in a single department with occasional job changes
- c. are passed over for promotion because outsiders are hired



Remote access



**Managed
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**Virtual private
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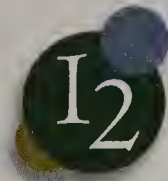


Managing your data network in today's business environment requires serious juggling. Need help? MCI WorldCom Advanced Networks is the answer. The data communications solution behind 3,000 of the world's largest corporations, Advanced Networks provides comprehensive Internet, Intranet, Extranet and hosting services to companies whose



An integral part of every employee's job at your company is

- a. doing prescribed duties as explained in the employee manual
- b. attending training and development programs on an ongoing basis
- c. faithfully executing the strategic plan devised by executives



The most acceptable path to achieving radical change at your company is

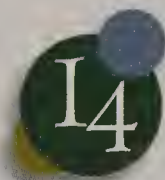
- a. hiring consultants to reengineer processes
- b. incrementally adapting processes in response to the business environment
- c. encouraging employees to come up with new ideas or change existing processes

Company Capabilities



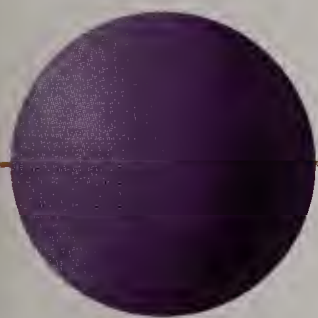
Your company has partnerships with

- a. customers
- b. customers and other organizations in the same industry
- c. any constituency that helps your company achieve its strategic goals



Your company's digital strategy

- a. supports existing processes, relationships and products
- b. directly contradicts traditional lines of business
- c. exists only on paper to date



Web hosting



E-commerce



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I5

Your company's strategic direction emerges from

- a. annual strategic planning sessions attended by board members
- b. the person in the corner office
- c. scenario planning exercises performed by managers

I6

Executives set goals that

- a. are ambitious yet have no established plan for achieving them
- b. are clearly defined with step-by-step milestones
- c. take advantage of the traditional strengths of your company

ANSWER KEY

Award your company the specified number of points based on your answers

Section 1: Culture and Attitude

- 1. a = 2 points; b = 0 points; c = 1 point
- 2. a = 2 points; b = 0 points; c = 1 point
- 3. a = 0 points; b = 1 point; c = 2 points
- 4. a = 0 points; b = 1 point; c = 2 points
- 5. a = 2 points; b = 1 point; c = 0 points

Total Culture Score ____

Section 2: Internal Processes and Practices

- 6. a = 0 points; b = 1 point; c = 2 points
- 7. a = 0 points; b = 2 points; c = 1 point

Simon Says "Grow Up!"

Exabyte says we have. Introducing the newest member from the leader in automation, the 690D.

8. a = 1 point; b = 2 points; c = 0 points

9. a = 0 points; b = 2 points; c = 1 point

10. a = 2 points; b = 1 point; c = 0 points

11. a = 0 points; b = 2 points; c = 1 point

12. a = 0 points; b = 1 point; c = 2 points

Total Processes Score: ____

Section 3: Company Capabilities

13. a = 0 points; b = 5 points; c = 10 points

14. a = 5 points; b = 10 points; c = 0 points

15. a = 5 points; b = 0 points; c = 10 points

16. a = 10 points; b = 5 points; c = 0 points

Total Capability Score: ____

Total of all points: ____

If you scored less than 2 points, your company is in code blue. Seek professional help immediately.

If you scored from 3 to 8 points, your company has the right attitude; the next step is turning the attitude into action.

If you scored from 9 to 22 points, your company is thinking organically in terms of its internal processes. Now it's time for your company to apply its organic thinking outward.

If you scored 23 to 50 points, your company is well on the road to becoming an organic company. Your internal processes are for the most part in sync with your external practices.

If you scored 51 to 64 points, your company is a learning, organic enterprise. Chances are good that your company will outlive your competitors.



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A full-page photograph of Joe Tucci, Global CEO of Wang, standing on a balcony. He is wearing a dark suit, a white shirt, and a patterned tie. He is leaning on a metal railing with both hands. The background consists of large glass windows that reflect the sky and some outdoor structures. The lighting is bright, suggesting daytime.

During tough times, it's particularly important to focus externally on customers, says Wang Global CEO Joe Tucci.



FROM THE ASHES

Sometimes the mark of a great company
is how it bounces back from defeat

BY GARY ABRAMSON

MORE THAN EVER, COMPANIES FACE AN onslaught of challenges that can drive them to a painful and premature demise. True, some companies hobbled by bad management or crippled by market forces should slip away quietly in the night; the energy and financial resources needed to sustain them can be put to better uses. Yet many companies on the brink of death can and should be saved. Like a critically ill patient with weak vital signs, some companies can totter on the edge, only to revive and thrive. Others aren't so fortunate.

The key to surviving is uncovering the unique life-sustaining abilities and strengths that lie—sometimes hidden—within most companies. Four companies that found the will to survive and rebound from critical conditions provide life-affirming lessons.

READER ROI

Just because a company falters doesn't mean its days are numbered. Organic companies know how to renew themselves. In this story learn

- ▶ Why customers are the key to corporate renewal
- ▶ Where to uncover hidden strengths
- ▶ How to combat the cultural barriers to change

Finding the Hidden Value

Back when Wang Laboratories Inc. was flying high, President Ronald Reagan came on television one night to share another of his folksy jokes with a moral: As a boy, he recalled, his father led him to a barn filled with what seemed to be nothing but manure. "There must be a pony in there somewhere!" the young Reagan supposedly shouted. The people who built up Wang in the 1980s weren't quick to fathom how its corporate clients' need for open systems would erode its value. So as Wang veered toward bankruptcy in 1992, the task that faced Joe Tucci was not so different from young Ronnie's when standing outside that barn: Find the true value amidst the muck. "When you're doing a reinvention, you have to pick something that you're doing well, a core competency to build around," explains Tucci, chairman and CEO of Wang Global, the Billerica, Mass.-based company that emerged from Wang Laboratories after the bankruptcy.

Wang had built most of its fortunes around the design, manufacture and distribution of its VS minicomputer. But like other makers of proprietary systems, Wang got caught off guard by the rise of open systems computing. From a high of \$2.9 billion in its heyday from 1988 to 1989, gross sales plummeted to between \$1.7 and \$1.9 billion by 1992. Tucci says none of the proprietary systems makers had much of a chance against Unix-based open systems, but he notes that Wang competitors such as Hewlett-Packard Co. had other product lines they could shift their weight toward. Because Wang was a one-product-line company, its options were limited. "I could not develop a RISC-based, new, open platform," says Tucci. "Who was going to lend me the hundreds of millions of dollars to do that?"

But Wang—in what Tucci calls "the end days"—was selling its VS systems to be installed in heterogeneous networks. At the request of customers, the company began to bid on installing net-

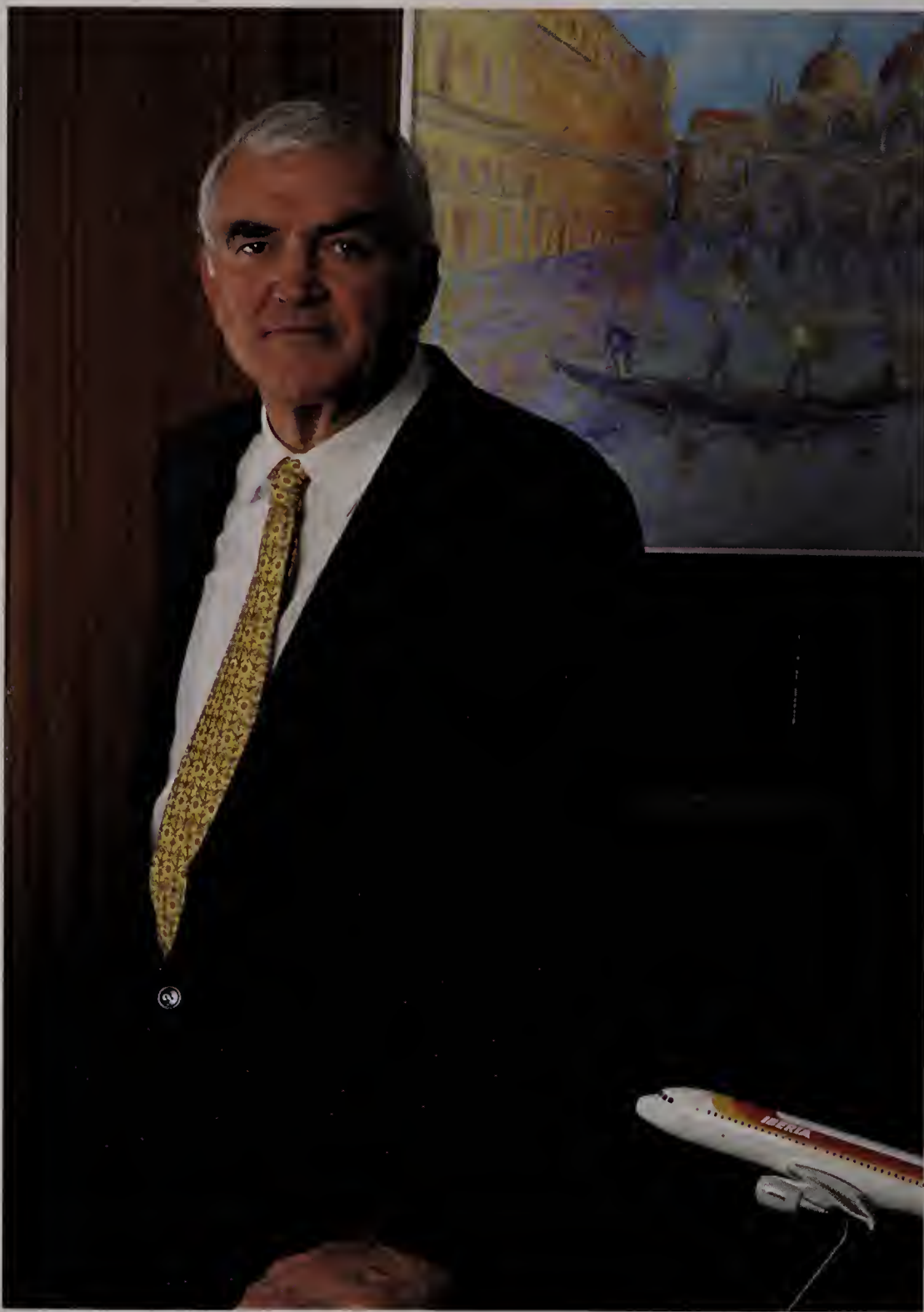
work infrastructure, including peripherals and its own PCs. While Wang wavered in and out of bankruptcy for 13 months from 1992 to 1993, Tucci estimates that this service was bringing in about \$200 million in revenues. Yet researchers such as GartnerGroup Inc. of Stamford, Conn., were projecting that the market for network services would reach \$125 billion by 1997.

With that kind of a market, Tucci sold off or closed Wang's manufacturing facilities and some of its R&D capabilities and software development efforts. Tucci then transformed Wang into a service company, retaining only the VS support for its existing cus-

tomers. Today Wang's annual revenues exceed \$3 billion.

Selecting the germ of the old Wang from which to grow the new company was crucial, but it was far from the only challenge. The management style of the company had to shift from the research-minded culture instilled by founder Dr. An Wang to an outward-looking sales and service organization. Particularly during a bankruptcy, Tucci says, it's easy for a company to focus inward, yet it's most important that employees focus on customers.

Tucci says it was a major challenge to convince customers where Wang was going. "If I was dealing with a major service provider of mine in Chapter 11, I would want to make damn sure they'd



A private-sector mind-set keeps Iberia Airlines flying high, according to VP of Corporate Affairs Guillermo Serrano.

PHOTO BY DEXTER HODGES / BLACKSTAR

On one hand, your server operating system is about keeping the network up and running.

There is, however, the other hand.

Microsoft® Windows NT® Server 4.0 runs both your network and your business applications. This is an important distinction.

It means you won't spend your days figuring out how to cobble together business solutions, because more parts of your network will be tightly integrated. It means your network can do more now, do it more efficiently, and give you fewer headaches over what the future holds. It means Windows NT Server is a true multipurpose server operating system.

It all starts with great file and print. (In fact, Windows NT Server 4.0 is a 25% faster file server than NetWare 5.) Then, when you're ready, it lets you take advantage of the latest network functions.

What this really means for you is a solid foundation, and the freedom to grow into whatever you need down the line.



succeed," he says. To that end, Wang Global launched image and PR campaigns that emphasized the company's new focus on network services.

Tucci also needed to recharge the roughly 4,000 people who remained from the old Wang and to make believers out of new hires. One successful tactic was distributing 50 shares of Wang Global stock to each employee.

According to Tucci, most of the client skepticism about Wang's survival has faded as the company has grown through acquisitions and strengthened its position with several partnerships, including the purchase of Olsy, an IT solutions and service subsidiary of Olivetti S.p.A, last year. And the pony-size business unit he chose to nurture at Wang's low point is growing into a venture that could well become a thoroughbred in the network services industry.

Unleashing the Competitive Spirit

As a poor Spain arose from decades of insular torpor, Iberia Airlines climbed skyward during the 1960s. A more open economy and a steady influx of foreign tourists fueled the state-run carrier's growth. But in the early 1990s Iberia went into a nose dive. Grand designs to become a major international player by linking up with smaller Latin American airlines turned instead into a financial and managerial quagmire. Iberia, industry experts said, stumbled its way through the cultural, political and managerial challenges of operating in Spain's former colonies. During the same period, the Gulf War depressed international air traffic, compounding Iberia's problems. As losses mounted into the hundreds of millions of dollars by 1995, Iberia's executives were pleading for a Spanish government bailout from what they termed "technical bankruptcy." If Iberia were a private company instead of a protected state enterprise, it would have been closing up shop.

Yet by autumn 1998 Iberia was not only back in the black but had won an endorsement from American Airlines Inc. and British Airways PLC as part of a new strategic alliance among the three carriers. (At press time, British Airways

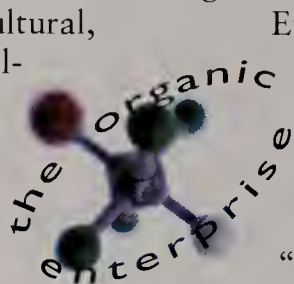
and American Airlines were in the final phases of negotiating the purchase of a 10 percent stake in Iberia.)

How did Iberia change its prospects in a few short years? The unexpected keys to the airline's turnaround came from an unlikely place: Brussels, the bureaucratic seat of the European Union. In the early 1990s the EU's member nations began creating a unified market that would eventually bring

TOO MUCH REVOLUTIONARY CHANGE TOO QUICKLY COULD HAVE KILLED THE COMPANY

—Charlotte Fischer

deregulation to every industry. Airlines, along with telcos, had long been sacred cows in Europe. In 1996 Iberia received an \$800 million state investment authorized by the European Commission to support restructuring the organization as a private company. "If Iberia had remained a monopoly in Spain, perhaps [Iberia] would not have had to lower costs. But the market opened, and we went from having it all to having two other competitors who took 30 percent of the domestic market," says Guillermo Serrano, the airline's vice president of corporate affairs. Outside Spain, the old protectionist policies were also being dismantled. Competitors in the



European market—Iberia's mainstay—began cutting fares and sharpening their operations. This forced Iberia's management to do an about-face.

"We took steps to identify each business unit's aims, costs and what could be eliminated. This helped to change the mind-set [of employees]," Serrano says. "For the first time there were layoffs, and people saw they had to justify their jobs." From 1995 to 1997 the company shed 4,000 employees and slashed wages by an average of 8.3 percent. But such turmoil has actually nurtured a healthier company culture, Serrano believes. For example, Iberia's ground and passenger handling unit has been reorganized as a profit center that must compete in a free market. Iberia also needs to pay atten-

tion to services such as information systems and catering that now run as profit centers. "Old employees began taking early retirement and the younger generations took over, some in management positions, and the vision changed," Serrano says.

Although forced to accept free-market principles, Iberia is proving to be a nimble competitor. In 1996 the company posted its first net profit of the

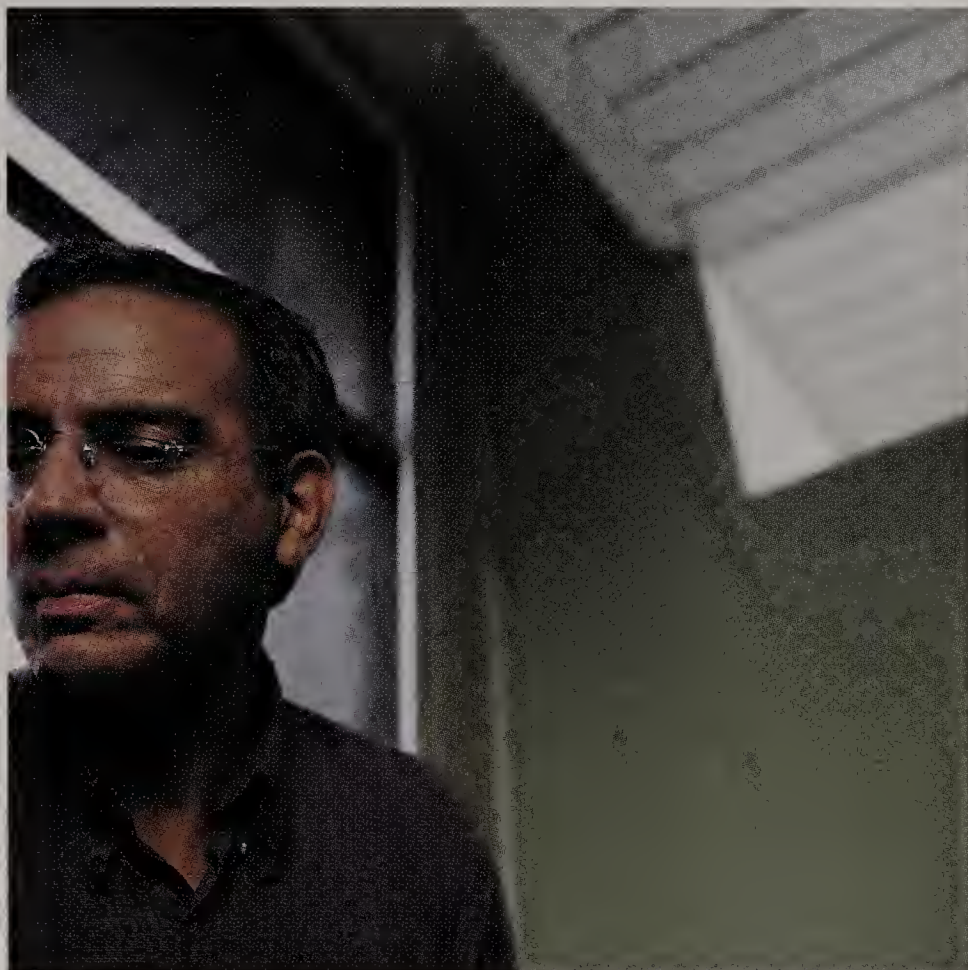
decade and expects to report a 16 percent return on equity in 1998. The increased efficiency of its operations brought down total costs by \$245 million annually, and Iberia's debt dropped from \$1.3 billion dollars in 1994 to \$476 million in 1997. Iberia's core clientele has shifted to business customers. To gain their loyalty, the company launched a frequent flyer gold card, which now has one million subscribers.

With the newly acquired private-sector mind-set, the airline is scheduled for full privatization in 1999.

Cultural Rebirth

You've heard the one about how many psychotherapists it takes to change a light bulb: Just one, but the bulb has to want to change. The joke is easy to apply to the revival of Paul Harris Stores Inc. When Charlotte G. Fischer was brought in to reinvigorate the Indianapolis-based chain of 301 women's casual clothing stores in 1994, her basic challenge was not discovering how to reorient the product offerings, although she clearly had to do just that. The bedrock problem was how to change the attitudes and habits of a 42-year-old company that had fallen asleep at the switch while lifestyles, technology and its customers all had sped past.

The customers who once shopped loyally at Paul Harris Stores—fashion-conscious women on tight budgets who often shopped with children in tow—had slowly abandoned them. Many of the stores had become shabby, and



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**At Paul Harris Stores, CEO
Charlotte Fischer had to instill
a new upbeat attitude.**

there was little space for anyone accompanying the shopper to relax. Most critically, the chain had lost touch with the tastes and needs of its customers. It stuck to a narrow product line of sweaters, turtlenecks and stirrup pants while competitors offered complete mix-and-match wardrobes. It squeezed the most merchandise possible onto the retail floor, making it difficult to shop with children. Fischer, who is now chairman, president and CEO, saw that drastic change was needed but immediately hit a wall.

"The toughest thing I faced was the culture issue," Fischer recalls. "I was the first new chairman and CEO who was not family in the history of the company." Fischer's arrival came two years after the company emerged from bankruptcy protection in late 1992. Part of her challenge revolved around the pace of change. "Too much revolutionary change too quickly could have killed the company," she says. "But to bring in a few new players to move the company forward and to focus on our strategic game plan was critical."

Fischer also had to contend with the dour mood of employees. "I was up against all these people [in the workforce] who thought [the company] would fold. It probably aged me 10 years in 4," Fischer says. So her first task became to convince employees that she had a vision for the company that could turn things around. The staff no longer had "a winning attitude," she recalls. After many years of setbacks, employees had ceased to fight obstacles or embrace changes. "You have to begin to show small indications of change," Fischer says.

She started with a high-tech overhaul: ordering a new fax machine so that her secretary would no longer have to use a broken one on the second floor that only received and another on the first floor that could only send. "That made me be viewed as a big spender," she says quite seriously. Eventually, Fischer and the former vice president of finance, John H. Boyers, updated nearly all the IT at the company, including the links between the

distribution center and the stores.

Fischer's new team believed it could put the clothing chain back on track, so it went out to meet the long-neglected core customer. Survey takers visited homes and saw how the 25- to 50-year-old "soccer moms" who shop at their stores live. They were pressed for time and needed comfortable, mix-and-match clothes. The first of Paul Harris's new stores based on the updated customer profiles opened in 1996. They featured expanded wardrobes of clothing, wider aisles to accommodate strollers and video areas for children.

So far, listening to customers has been a smart move. The chain has been adding about 50 stores a year and reported earnings last year of \$9.7 million on sales of \$209.2 million.

Sweet Home, Oklahoma

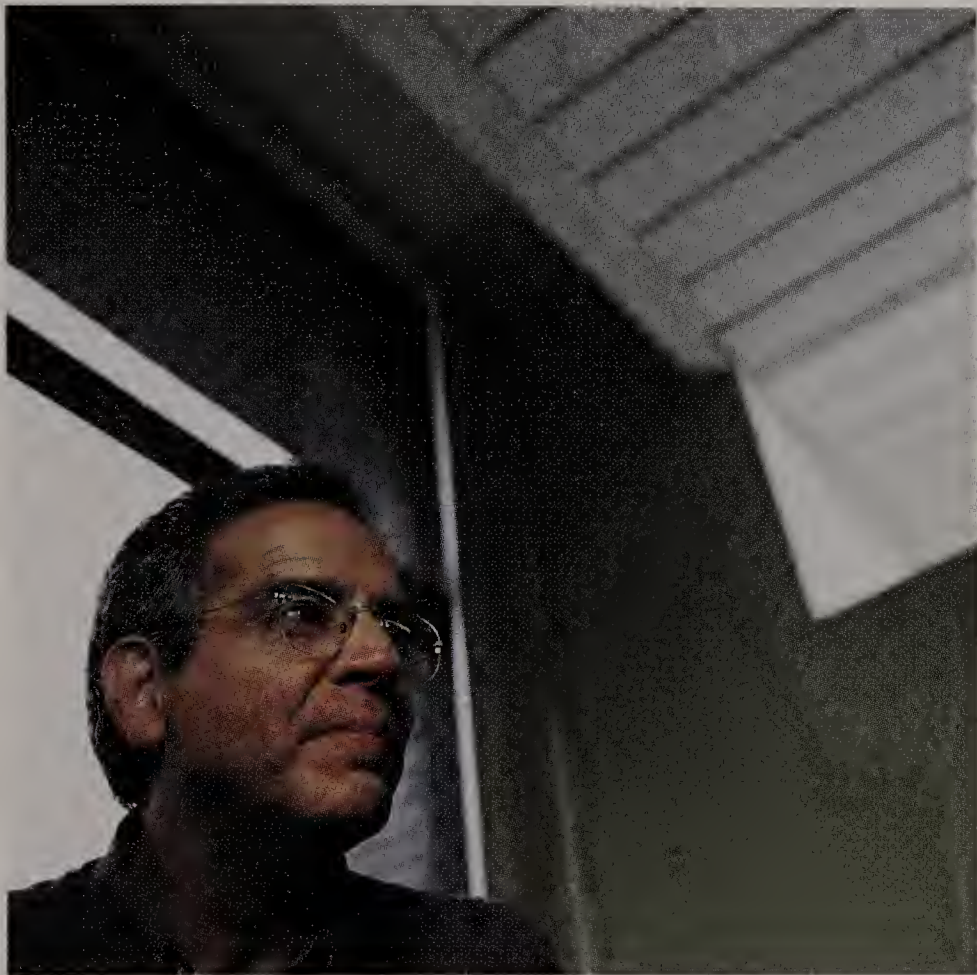
After two bankruptcies in five years, it would be an understatement to say that

Orchids Paper Products Co. had lost its way. The 50-year-old manufacturer of toilet paper, napkins and tissues had badly misjudged its strengths based on a buoyant period in the late 1980s.

Thinking Orchids could capture a growing market for private-label paper products in California, where it was headquartered until August 1995, company managers veered away from its low-cost product line. But the unexpectedly high cost structure of that strategy, combined with debt from a late-1980s leveraged buyout, brought Orchids to the brink of liquidation. At one point, its costs for raw materials and processing finally rose above what it could charge its customers. In 1992 Orchids filed for bankruptcy; then in 1995 it sought protection again.

Two veterans of Fortune 500 companies working at Orchids had a multifaceted strategy for saving the company: retrench to the core market of value-





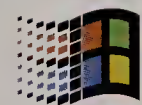
And what about tomorrow's network? Or tomorrow's Windows NT Server?

Chances are you won't immediately use every whistle and bell we've included in Microsoft® Windows NT® Server 4.0. These features will, however, be there when you need them tomorrow, and won't get in the way of network performance today.

With future versions of Windows NT Server, similar logic applies. In the same way that having a multipurpose OS lets you adapt to new solutions, Windows NT Server also gives you the flexibility to easily upgrade when you are ready.

Windows NT Server 4.0 lets you do what's right for today, and lets you prepare for the challenges ahead.

As you take the time to make the right server OS decision, you may want more detailed information. We've assembled some new resources for you at the Web address below.



Windows NT®
Server 4.0

www.microsoft.com/go/WindowsNTServer/

Microsoft®

Where do you want to go today?®

seeking customers, raise efficiency through new information technology and beat a tactical retreat to the executives' home turf in Oklahoma. "I'm from Oklahoma, and [Orchids' president] Mike [Sage] is from this part of the country, but frankly there's some bias against having headquarters here," says Orchids CFO Jim Swagerty, referring to the initial unpopularity of the move. But even if corporate snobs found little cachet in working in Sooner country, Swagerty and Sage saw a strategic opportunity. "The market we went for is more suited to the recycled paper we sell in Oklahoma," Sage says. Utility costs, a critical factor in the energy-intensive paper business, were also lower than in California. With a target market that now covers an area from Oklahoma to Chicago to the Atlantic, it made sense to set up shop in Pryor, Okla.

In 1995 Orchids lost \$500,000 each

month. In fall 1998 the company was earning up to that amount each month. "We're making 15 to 20 percent on revenues," Swagerty says. "Not many tissue companies are making anywhere near that margin."

The improvement isn't due wholly to a change of scenery. Swagerty credits the installation of a new ERP and accounting system from Macola Software Inc. of Marion, Ohio, with greatly improving efficiency. By giving employees in manufacturing and other departments greater access to order and production information, Orchids has much greater control over financials and customer service. And just as critical for a company trying to recover from a near-death experience, Swagerty says, were the audit features of the package that allowed investors and creditors to monitor progress. The

Macola system has enabled Orchids to get more from its staff because access to relevant information can be programmed on a need-to-know basis. That was a key part of the turnaround: giving employees the information they needed to ensure the delivery of orders and to keep the operating costs low.

The last piece of the puzzle was getting the most out of a sharply reduced workforce.

"We analyzed our operations to reach the minimum number we need," Sage says. "One of our customer service clerks handles our LAN network. Our maintenance manager for the converting mill handles all the artwork revision for our packaging. People wear whatever hats they need to, so we're able to make good use of all our people."

Sage acknowledges he is teaching the company a reverse lesson of his experience as an executive at The Procter & Gamble Co. He left the consumer-products mammoth in part because of its top-heavy management structure. "They make a very high margin and can afford that extreme level of attention to detail and have specialists for every function," he says. The much smaller Orchids doesn't have that luxury.

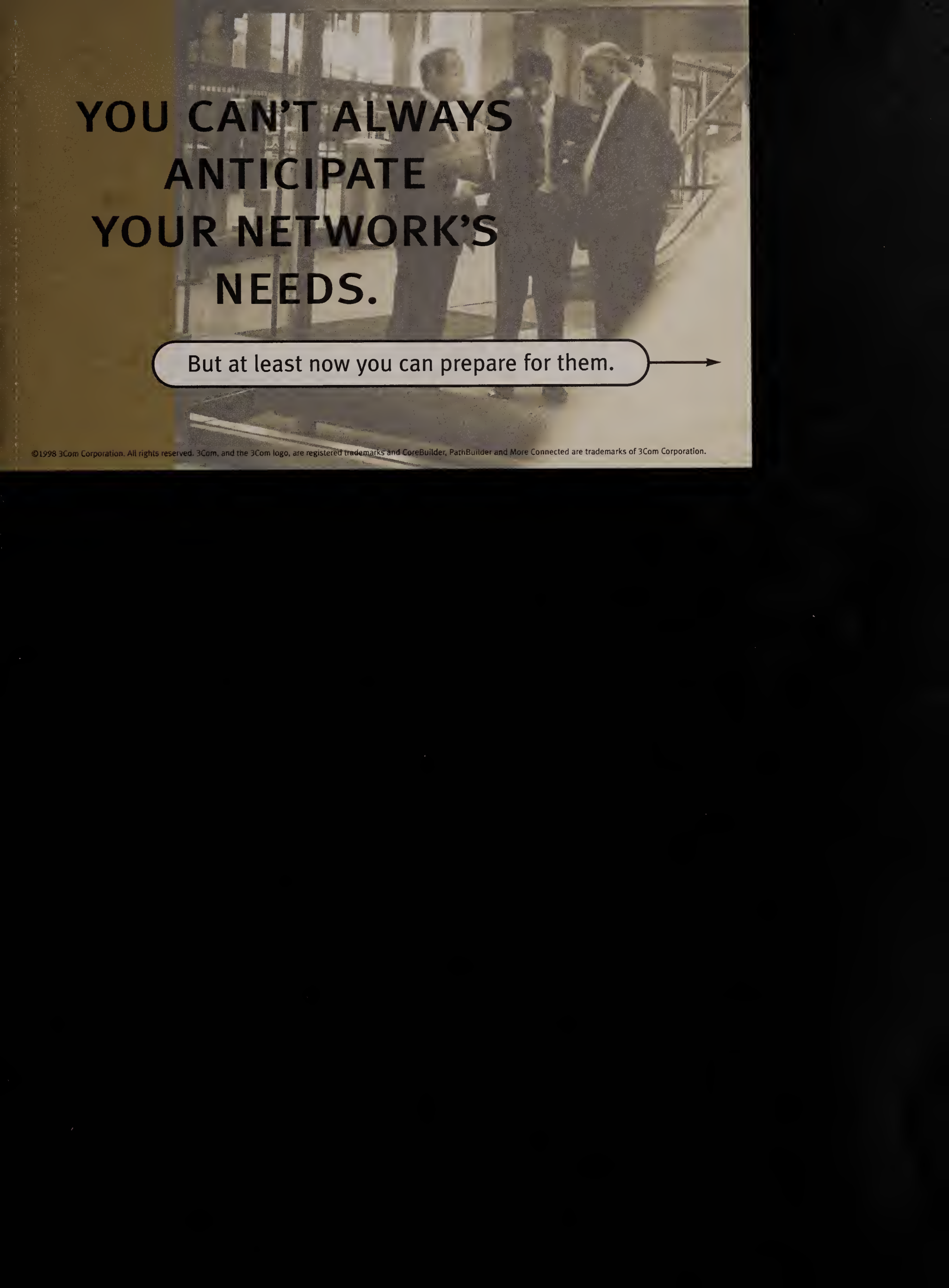
But then again, maybe it doesn't need layers of management. Swagerty says the trick to surviving is to take some of the lessons from Fortune 100 companies without crushing the entrepreneurial bent of a small company. "You can't superimpose a Procter & Gamble policy procedure here," he says. "Orchids would be dead in a week if it were run by committee."

Besides stumbling badly at one time, Wang, Iberia, Paul Harris and Orchids share another common thread. Each rebounded from the dire situations they found themselves in or their own missteps had created by looking at the big picture, by reconnecting with customers and by filling a need in the marketplace. For organic companies, stubbornly sticking to old formulas and compulsively focusing on internal operations are death knells. **CIO**



For Orchids CFO Jim Swagerty, staying entrepreneurial is the key to survival.

Senior Writer Gary Abramson can be reached at gabramson@cio.com.



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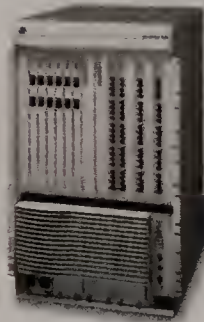
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THE RENAISSANCE COMPANY

In times of turmoil, Netscape knows
the key to its success begins and ends with its people

BY POLLY SCHNEIDER

INSIDE THE WALLS OF NETSCAPE COMMUNICATIONS Corp., a visitor would never know the company has been through one of the roughest periods of its five-year existence. Initially forced to turn its flagship browser into freeware and mired in the spotlight of the government's bitter antitrust suit against Microsoft Corp., Netscape is now preparing to be acquired by Dulles, Va.-based America Online Inc. in a \$4.2 billion deal set to happen in the spring. Yet the company's Mountain View, Calif., headquarters campus belies any sense of the turmoil that rages around it. Canine friends of employees cheerfully pop their heads over doggie gates (bound only by the "two poops and you're out" dictate) while their shorts-clad owners muse about "changing the world." The culture at Netscape has not veered far from the idealistic and unfettered work habits of a bunch of computer hacks

READER ROI

Netscape Communications' people have been adept at shifting gears when market conditions warrant. In this article learn about

- The connection between corporate culture and survival
- Why employees thrive with less hierarchical management
- How retention is affected by a learning culture



Longtime Netscape employee
Mike McCool credits the
company's success to its open-
door culture.

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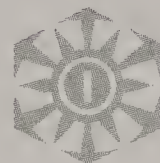
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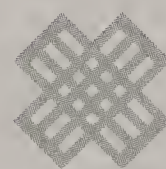
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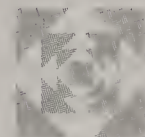
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Who's watching your network

“I’M CONSTANTLY SURPRISED HOW AT TIMES I THOUGHT WE WERE DOOMED BUT THEN THINGS PANNED OUT.”

—Mike McCool

from the University of Illinois who worked around the clock to launch the company’s first product suite in a mind-boggling eight months. It’s that culture—as much as products or strategy—that will determine how Netscape fares in the future.

Mike McCool, who’s been with the company almost from the beginning and who’s one of its star software engineers, is well aware of the draw of the company’s culture. McCool stays at Netscape because of the bright, motivated people the company attracts. At 1 a.m., there’s usually someone there to bounce ideas around, talk code, discuss a problem. At Netscape, employees operate on some sort of buzz, even at the strangest hours.

Not that there haven’t been bumps along the way. Netscape’s attrition rate is roughly 20 percent, according to Kandis Malefyt, the company’s senior vice president of people. But Netscape remains one of the companies defining the workplace of the future: fast, furious, nimble and exciting. In *Speeding the Net: The Inside Story of Netscape and How It Challenged Microsoft* (Atlantic Monthly Press, 1998), authors Joshua Quittner and Michelle Slatalla suggest that Netscape’s speed to market four years ago forever changed business practices in the software industry. In just one year after its 1994 inception, Netscape had grown from a struggling startup to one of the hottest high-tech IPOs of the decade. After engaging in a browser

fourth quarter of 1998, Netscape reported an encouraging 8 percent growth on revenues of \$162 million, and its enterprise software business now accounts for 75 percent of earnings. Long term, the company has a good shot in the enter-



True believers: (from left) Tim Kaiser, Richard Beal and Tony Lincoln are sold on how Netscape’s relaxed environment aids productivity and creativity.

war with Microsoft, Netscape had to enter new markets quickly. A year ago, for example, the company announced its intention to become a presence in the enterprise and e-commerce software and services arena. The strategy seems to be paying off. In the

prise market because it can compete well on price, performance and support, says Michael Murphy, publisher and editor in chief of the *California Technology Stock Letter* in Half Moon Bay, Calif. And equally important, he adds, “They really, viscerally understand the Net.”

The company’s ability to respond quickly to market forces—call it renaissance, renewal or, in dire times, recon-

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struction—is why it's still around today. And it's an ability that companies in other industries would do well to emulate as the pace of business change—and the need to adapt accordingly—pick up. McCool himself wonders at the company's resilience. "I'm constantly surprised over the years how at times I thought we were doomed but then things panned out," he says.

The secrets to Netscape's survival lie in its corporate culture. Unencumbered by rigid schedules and policies, employees are free to come and go as they please or work at home if they like. In an environment where everyone is encouraged to contribute and have a voice, a sense of equality is pervasive. That sense is evident in Netscape's cubicle policy in which everyone—including President and CEO Jim Barksdale—works in one. The company's dress code is succinctly explained by Barksdale on the new hire Web page: 'You must come to work dressed.' The company's environment is the ultimate expression of a casual, open-door culture, which keeps its people motivated and—more important, say company insiders—highly productive.

Netscape's permissive culture is not just an example of Silicon Valley excess. More than ever, how companies treat their employees will ultimately affect the bottom line. "Retention is the key to economic success," observes Jeffrey Pfeffer, a professor of organizational behavior at Stanford University's graduate school of business in Palo Alto, Calif., and author of *The Human Equation: Building Profits by Putting People First* (Harvard Business School Press, 1998). Three forces heighten a focus on people: the growing importance of knowledge workers to profits, a strong economy that has driven down the unemployment rate to 4.6 percent and the boost in demand for products and services by aging, free-spending baby boomers. The battle for staff is especially bloody in Silicon Valley, where the rate of attrition hovers near 30 percent by some estimates. Replacement costs can run as high as two to seven times an employee's annual salary, according to Roger Herman, a workplace consultant and CEO of The Herman Group Inc. in Greensboro, N.C.

For their part, employees today are after more than a paycheck, according to Herman. Values at the top of the list include meaningful work, independence, flexibility, a desire to learn on the job and a disdain for corporate hierarchies. "There is less emphasis on pay today than ever," affirms Tim Garmager, principal and national practice leader for the Human Resources Strategies Group at Deloitte & Touche LLP in Chicago. In today's job market, employers need to look closely not only at the benefits they offer but at the culture they engender.

Power to the People

AT NETSCAPE, INDEPENDENCE and a hands-off management philosophy are cultural hallmarks. "There are a million interesting things to do here," says Tony Lincoln, an IS systems engineer who offi-

cially joined Netscape in early 1998 after a two-and-a-half year stint as a contractor at the company. "As a consultant, I always felt like I had freedom, but in reality I have more freedom here," he says. Lincoln echoes the sentiment of many Netscape employees who say the company allows them to direct their own careers and try new things.

Patrick O'Hare joined the company in June 1997 to manage the internal human resources Web site. With the help of another HR colleague, he redeveloped the site from scratch



LEADERSHIP MATTERS

At Netscape, the key to keeping employees lies in convincing them to keep the faith

Workplace strategists talk about customized employee contracts, performance pay, equitable bonuses and other financial perks, but in reality, says Netscape Communications Corp. Executive Vice President and Chief Administrative Officer Peter Currie, compensation is about number four on the priority list. One of the top retention drivers, says Currie, is faith in management. That faith was tested at Netscape after the company laid off 300 employees in early 1998. In the first few months after the layoffs, the company's attrition rate saw a significant increase, according to Kandis Malefyt, Netscape's senior vice president of people.

To quell the exodus, management answered questions from employees in the weekly electronic newsletter and President and CEO Jim Barksdale held an "all-hands" meeting—coined "Barksdale Unplugged"—last March to answer touchy questions from the staff directly. Tensions were palpably high at the meeting. When someone asked if Barksdale planned to leave, he responded with a prompt, monosyllabic 'No.' When Barksdale held another meeting in May to galvanize the troops, he described how he might explain to his baby grandson one day what it was like working at Netscape and what impact the company had on the outside world. "When someone speaks from the heart like that, I think it has a crystallizing effect," Malefyt says.

Little things Netscape did after the layoffs—setting up a center on campus to help people find new jobs and offering transition workshops for those who remained—have slowly built up the level of trust between employees and the company.

And where there's trust, dissent is tolerated. The company's Bad Attitude internal chat group is a place where employees go to vent about the company. Netscape isn't all about self-congratulation, and that's a good thing for any company that has to reinvent itself.

—P. Schneider

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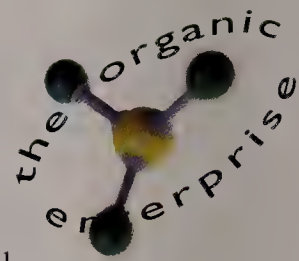
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in two months. Today the site is a full-fledged benefits, education and career management tool that—with 20,000 user sessions a month—is Netscape's biggest internal site. When O'Hare wants to make changes to a page, he doesn't need anyone's approval upfront. And when his daughter recently became ill, no one blinked an eye as he cut back on his work hours. "A company's responsibility is to provide you with the stage and the props and let you do the acting," O'Hare

Netscape's vice president of IS business applications. While that trust translates into a lack of bureaucracy, it nevertheless comes with certain expectations. Employees are accountable for their decisions and must be prepared to back them up with sound reasoning later in team meetings.



Netscape's Kandis Malefy encourages management to "speak from the heart."

reflects. "The tether is so loose on me here—it's a wonderful environment to have."

O'Hare believes that Netscape's relaxed work environment drives up productivity and creativity. Because there aren't layers of management and policies to work through, Netscape can "turn out products in a month," he says. "There is a high degree of trust here," says Richard Beal,

continually works on exciting projects.

Learning is also a tenet of Netscape's culture. While the company offers a full range of training options, including an annual \$6,000 tuition reimbursement, employees value the opportunity to expand their skills while on the job. Tim Kaiser,

McCool says he is at once flattered and uneasy about the responsibility. "The decisions I was making today and yesterday will have a long-term impact on the client software," he reflects. Not everyone is comfortable with self-direction, and managers must consider that when interviewing job candidates who may have the skills but not necessarily the right mind-set. Explains O'Hare, "For some people, it's too chaotic."

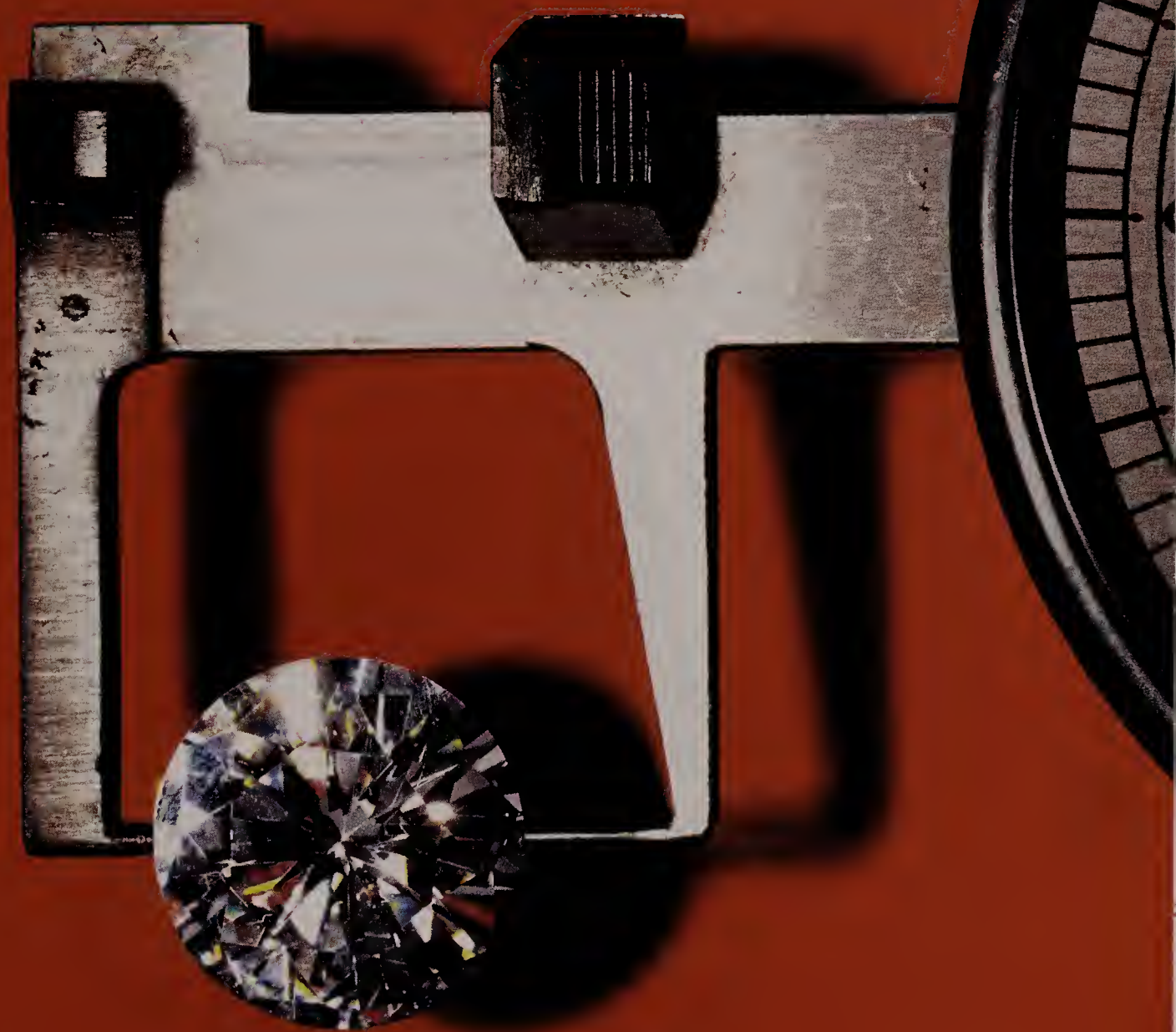
Job Renewal

JUST AS IMPORTANT as giving employees autonomy is helping them find new roles and challenges within the company. Beal oversees Netscape's 85-member IS business applications organization, a department that he proudly says has one of the lowest turnover rates at the company. Because IS plays the dual role of providing services to the business and testing new products before they go out the door, IS workers feel they have a big stake in the company's success. That stake translates into loyalty for Pamela Baer, an IS applications manager. Baer, who says she gets a couple of calls from recruiters a week, stays at Netscape because she

**"A COMPANY'S RESPONSIBILITY IS TO PROVIDE
YOU WITH THE STAGE AND THE PROPS
AND LET YOU DO THE ACTING."**

—Patrick O'Hare

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“MANAGERS REALLY TRY TO KEEP US INFORMED SO WE FEEL LIKE WE’RE INVOLVED WITH THE WHOLE COMPANY.”

—Tim Kaiser

a software engineer and project leader, came to Netscape because of its reputation for state-of-the-art technology. In his first year, Kaiser worked on four different projects.

Beal is a believer in letting his staff move around—whether it’s to a new project they’re fired up about or to another position in the department. During a two-month period last summer, 10 percent of his staff changed jobs, and direct experience often isn’t a requirement for a new assignment. One of Beal’s engineers requested and was granted a transfer to a team working to build business applications with a product he knew nothing about.

Keeping projects afloat in this environment is a challenge, but Beal, an IS veteran of Apple Computer Inc., NEC Corp. and several other high-tech companies, says most organizations lose employees because they don’t give them enough opportunities to try new things, take risks and make mistakes. “People stay here because they have space to operate,” he says. At the same time, Netscape recognizes that some experiments fail and therefore doesn’t punish employees for ideas that don’t pan out, according to Beal.

Netscape’s managers are aware of the vast choices employees have in the area. As a result, they are proactive in helping people identify new career paths inside the company. To help employees understand what’s going on in other departments, Netscape holds quarterly “all-hands” meetings where senior managers talk to the entire staff about strategy and direction. Product development groups also hold open weekly meetings to share the status of products or a new technology. All these efforts are designed to foster a sense of community. “They really try to keep us informed so we feel like we’re involved with the whole company,” Kaiser says.

Rethinking Rewards

PROVIDING EMPLOYEES WITH lots of services onsite is perceived by some as a tactic to encourage people to work more, yet Beal insists that isn’t the case at Netscape. “The message is more that the company cares about you,” he says. Aside from the standard package of health and vision benefits, Netscape has a program called Total Health and Productivity that aims to help eliminate some of the mundane hassles of life. Thanks to San Francisco-based services provider LesConcierges Inc., employees can drop off dry cleaning, hit the ATM machine, get an oil change, see a dentist or have a massage—without leaving campus. LesConcierges also helps with any number of personal affairs such as planning a trip or ordering gifts. Parents can leave “moderately sick” children at a nurse-attended child care facility near the campus for \$10 a day.

While long hours in Silicon Valley are the norm rather than the exception, time off is becoming a coveted form of

indirect pay. After four years of full-time employment, Netscape employees are eligible for a six-week paid sabbatical. Managers like Beal who are concerned about the common problem of self-imposed burnout have to constantly remind overachievers (there are a lot of them at Netscape, he says) that vacations are a good thing.

“Netscape has made a concerted effort not to be a sweatshop,” McCool says. After working himself to the bone on a project last year, McCool asked for a few months off. The company gave it gladly and helped him find a new position in the company upon his return. The company, he says, was “willing to go out of the way to make sure I was happy.”

But let’s get real. To keep skilled workers, companies will have to keep up with constantly evolving compensation trends. Incentive pay is becoming widespread for employees at all levels, not just top management. At Netscape, employees can earn bonuses based on individual or group performance, such as meeting new product ship dates. For senior executives, incentive pay programs run the gamut from 1 percent to 30 percent of annual salaries. In addition, a corporate-wide bonus is paid out annually based on revenues per employee and customer satisfaction figures. All employees can earn raises during their annual reviews, provided they’ve been with the company for at least six months, and they may qualify for spot bonuses at their manager’s discretion.

Change Is Good

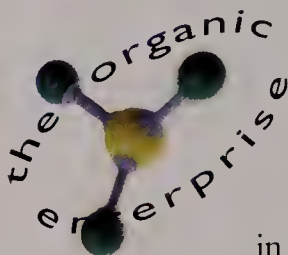
BEYOND ALL THE PERKS—pets, bonuses, sabbaticals, flexible schedules—a top reason employees give for sticking around is the opportunity to work with really smart people.

If smart folks like a challenge, Netscape has plenty to offer. Even with the recent deal with AOL, Netscape must reestablish confidence after a disappointing two years on Wall Street and losses of \$88 million in the fourth quarter of 1997.

Yet even in times of turmoil, Netscape isn’t reverting to restrictive management practices. And in that respect, the company may be on to something.

A renaissance company is one that thrives on change and invention and gives its people the chance to be part of a bigger mission than punching the clock. Talented workers need motivation—bolstered by a feeling of team spirit and a sense of contributing—to get through the rough times. McCool hesitates to predict what the future will hold for Netscape. But in 20 years, he imagines what the company’s legacy could be. “I’d like to think that Netscape is the company that helped open the doors to the Internet and made it fun to surf the Web.” **CIO**

Senior Writer Polly Schneider can be reached via e-mail at pschneider@cio.com.



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Motorola founders Paul (left) and Joseph Galvin in 1930, in front of the company's first factory in Chicago. Motorola leverages its history of continual renewal in the high-tech present.



A SENSE OF WHO YOU ARE

As the pace of technological and corporate change accelerates, one thing stays the same: the past. And when you're strategizing your company's future, that's an excellent place to start.

BY TOM FIELD

CORPORATE
IDENTITY

MOTOROLA INC. PIONEERED TELEVISION MANUFACTURING in the 1940s. By the late 1950s, when more than half of all U.S. households owned at least one set, TV sales accounted for a major portion of the Schaumburg, Ill., manufacturer's revenue.

But by the mid-60s, Motorola's then-president Bob Galvin, son of company founder Paul Galvin, could see that the television marketplace was saturated, demand was leveling off and Japanese competitors were increasingly dominating the business. No question, Motorola's TV business was still profitable, but Galvin could foresee a day when that might no longer be the case. It was, he thought, time to explore new markets.

In the 1970s, Motorola shipped its last TV. In fact, it walked away from the consumer electronics business entirely. The company's resources were redeployed to develop new,

READER ROI

Organic companies learn from history. They know who they are, where they've been and what successes and failures they've met with along the way. This story will show

- ▶ How companies can profit from studying their history
- ▶ Why history lessons are relevant to new ventures
- ▶ What CIOs can do to preserve and leverage their company's history

high-tech commercial, industrial and government products ranging from cellular telephones to space satellites, which fueled Motorola's global expansion in the '80s and '90s.

Today at Motorola, TV manufacturing is history. But the lessons learned from that experience continue to be drilled into the heads of new recruits at the company's Motorola University training facility. What's the lesson? Continual renewal. This recurring

history to each new employee.

■ **Avoid past mistakes.** Companies like Motorola preserve and present the historic details of specific projects or business ventures, such as television manufacturing, so today's employees can apply the lessons learned in today's—and tomorrow's—ventures.

At Motorola, this corporate history is preserved by a full-time staff of six, which maintains both a museum and archives. The museum, opened to the public in 1991, offers exhibits and time lines of Motorola's diverse products. The archives, available mainly to Motorola executives and researchers, include business documents, annual reports, employee communications and product information used regularly by today's execs for marketing, patent protection and—most important—to educate new employees.

"We really don't maintain this material for sentimental reasons," says

Sharon Darling, director of the Motorola Museum of Electronics. "We're in the competitive high-tech business.

Turnover is swift; memories are short. This information needs to be shared on an ongoing basis with the people we bring in. They need to know about how we value creativity, our ability to shift focus from one business to another. They need to see the consistent themes. They need to know what other people did before them, and why they did it."

Still, devoting corporate resources to historic preservation can be a tough sell to business executives who think vision is what they imagine they can see down the road. "The word 'history' carries a lot of baggage," says George Roth, a researcher at MIT's Center for Organizational Learning and cofounder of Reflection Learning Associates, a Cambridge, Mass.-based consultancy that writes business histories for companies. "Businesspeople are so action-oriented," says Roth, "that reflection and learning often aren't valued. Performance is all that's valued."

To counter skeptics, many historians

QUESTION

What is the only extant company to have been a member of the original Dow Jones 30 Industrials in 1896?

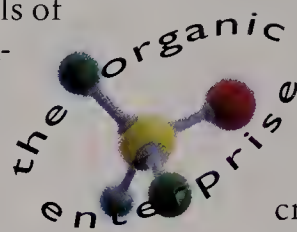
A: General Electric

theme in the company's history is now a core value. Today's senior executives want succeeding generations to understand that Motorola's history teaches that sometimes the critical decision is not when to get into a market but when to get out.

The television story is just one example of how Motorola leverages its history to inculcate its core values in its new employees, and Motorola is but one of many businesses to have discovered the value of preserving and teaching their business histories. By maintaining archives, establishing museums and compiling corporate histories, executives find not just that they can share lessons learned from the past but that they can profit by using history to

■ **Market the brand.** Walk into Levi Strauss & Co. headquarters in San Francisco and the first thing you see is a wall display of jeans, past and present. When it comes to boasting of its history, Levi Strauss is like a grandmother with baby pictures. And if customers can't trust grandma, who can they trust?

■ **Transfer knowledge.** Today, business is like baseball: Loyalty to the team is out; free agency is in. To bring newcomers up to speed on core values and past experiences, to teach them what has worked and what hasn't, Wells Fargo & Co., the San Francisco bank that started out as a stagecoach company in 1852, teaches its corporate



FOUR EASY STEPS FOR TACKLING BUSINESS HISTORY

Intimidated by the prospect of putting your company's entire business history in perspective? Here are some startup tips shared by business historians and corporate archivists:

■ **Be prepared.** Business history isn't just an antiquarian exercise; it requires as much strategy and tactics as any business move. First, determine what elements of its history are important to your business. Otherwise, you're on a fishing expedition—and a doomed one at that.

■ **Be thorough.** Records management is the key to successful archiving. Start with your company's annual reports, which account for the major year-to-year decisions. Then ensure access to whatever documents detail key hirings, acquisitions and decisions.

■ **Be professional.** This isn't a job for amateurs. True archival research is as much science as art, and it requires training and experience to do it right. If you don't have the skills on staff, outsource the work.

■ **Be accessible.** History isn't any good if it's kept a secret. To maximize the benefits you gain from your company's legacy, establish either a physical or a digital archives center that executives can search. Also, put together exhibits that show how past projects succeeded or failed. Don't assume that people will draw these conclusions by themselves.

—T. Field

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cite the well-traveled George Santayana quote, "Those who cannot remember the past are condemned to repeat it." But Philip Cantelon, president and CEO of History Associates Inc., a Rockville, Md., consultancy, has a different spin on the old line. Once, while preparing a presentation on business history, Cantelon found that his secretary had made a typo transcribing the quote. Instead of "repeat," she typed "repent."

Cantelon began to correct the error but then stopped. "I liked the word repent," he said. "It's only one letter different, but it makes a world of difference in meaning." Cantelon ran with "repent," and he's been running with it ever since. It's now the key point he tries to hammer home: If you don't heed the lessons of your corporate past, then you surely will pay the price in the future. If you have a future.



span at less than 50 years. But the companies that do beat the odds—the DuPonts and the General Electrics—share both an appreciation of their legacies and a willingness to change with the times. The two are not incompatible. Indeed, the history of long-lived companies is almost always a story of change. These industrial Methuselahs bind themselves to their sense of corporate identity but not to the way they've always done things.

Yet sometimes even the longest-lived companies don't fully appreciate their legacy until they stray from it. Such was the case with Canada's Hudson's Bay Co.

Established in 1670 by a royal charter from England's King Charles II, Hudson's Bay Co. (HBC) began as a

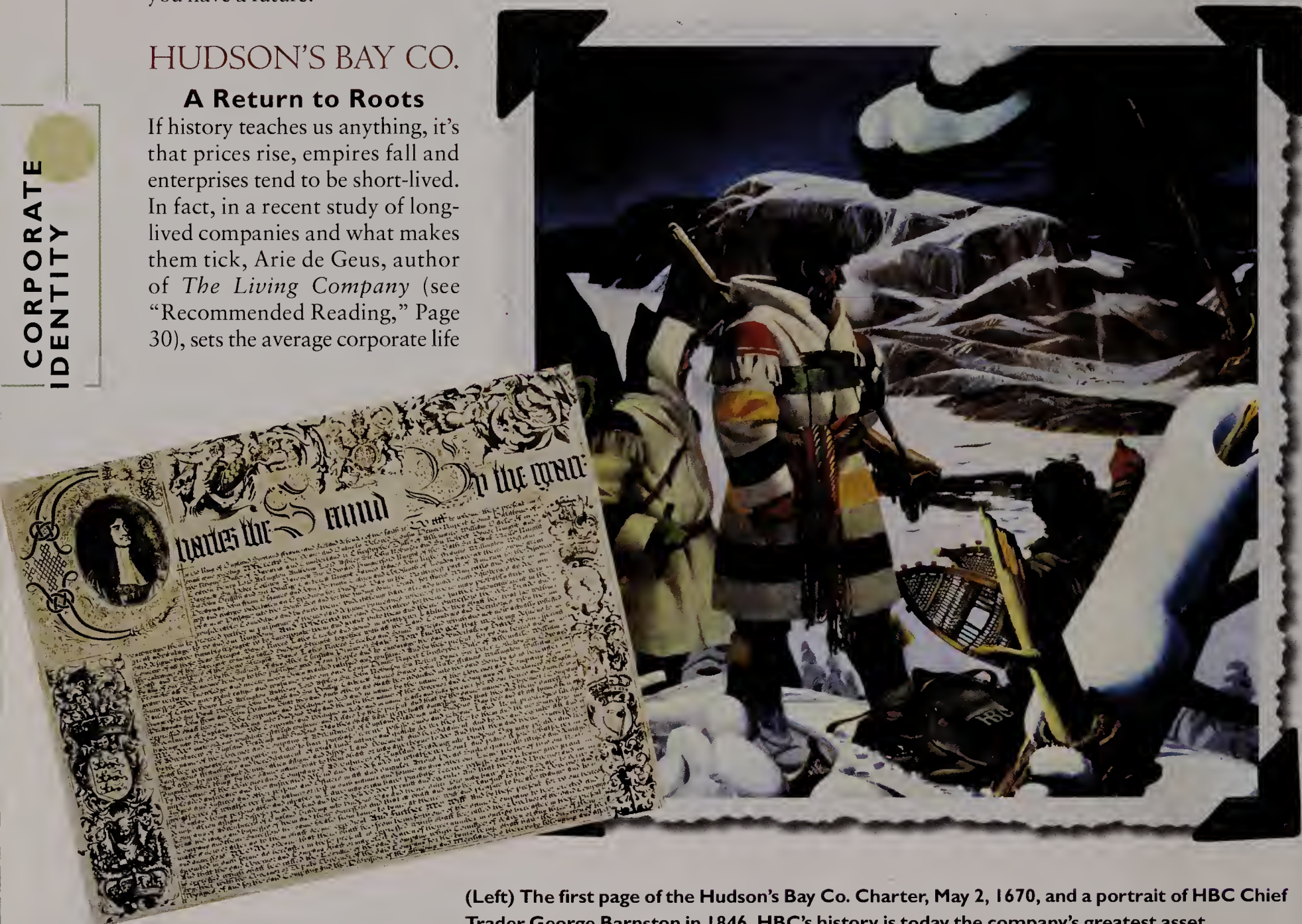
fur-trading operation near Canada's northeastern inland sea. Over the next two centuries, HBC became an integral part of North American history, leading exploration and settlement of Canada's vast western provinces. The company also became world renowned for its fur trade and its famous HBC Point Blankets, the ones with the colorful stripes on the ends.

Yet in the early- to mid-20th century, HBC moved away from its past. As the company grew to become Canada's largest retail outfit, it gobbled up such large Canadian competitors as Zellers and Simpsons and expanded into new businesses, including real estate and oil. But then came the recession of 1981, forcing HBC to divest unprofitable assets. Among the casualties was its Northern Stores Division with its historic ties to a fur trade that had become increasingly unpopular in an era of

HUDSON'S BAY CO.

A Return to Roots

If history teaches us anything, it's that prices rise, empires fall and enterprises tend to be short-lived. In fact, in a recent study of long-lived companies and what makes them tick, Arie de Geus, author of *The Living Company* (see "Recommended Reading," Page 30), sets the average corporate life



(Left) The first page of the Hudson's Bay Co. Charter, May 2, 1670, and a portrait of HBC Chief Trader George Barnston in 1846. HBC's history is today the company's greatest asset.



What, exactly, is the best way to

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heightened sensitivity to animal rights.

At that point, says Judith Hudson Beattie (no relation to Henry Hudson), keeper of the HBC archives, executives lost touch with the company's history. "It was very hard to get [HBC executives] to pay much attention to our archives," Beattie says. "I think they thought the history made them look dated."

What they didn't understand, of course, was that the archives were one of HBC's greatest assets. Originally amassed in England in the 1920s for a 250th anniversary book that never materialized, the HBC archives consist of photographs, maps, drawings and other documents dating back to the 1600s. In 1994 HBC donated both the archives and a Winnipeg-based HBC museum to the province of Manitoba. Today the archives, appraised at \$60 million, are managed by a full-time staff of 13 and consist of roughly 11,000 maps and drawings, 5,000 books and pamphlets, 150,000 photographs, 800 works of art and a mile and a half of business records.

In recent years, Beattie says, HBC executives have learned to look to their past. And as the company has returned to its roots, so has it returned to prosperity. In its most recent earnings report, HBC claimed nearly a 10 percent growth in sales and revenues over the same period in 1997, purchasing Kmart Canada along the way.

The company's aversion to history is history. Historic images now appear in advertisements. A large portion of HBC's Web site (www.hbc.com) is devoted to detailing HBC's past—the high points and the low. HBC executives also have taken new steps to contribute to the archives, Judith Beattie says. Earlier this year, the company hired its first records manager to supply the archives with new and important documents. "It had been very difficult previously to get a steady flow of documents from the company," Beattie says. "We had better records for the 1880s than we did for the 1980s."

In November HBC brought its legacy to market with the opening of its first Outfitters store—a retail outlet that sells clothing, equipment and collectibles that represent HBC's heritage. The store, fea-

turing indoor waterfalls and working fireplaces, evokes Canada's frontier past. In announcing the opening of the Outfitters store, HBC CEO Bill Fields paid more than passing tribute to the 328-year-old company's legacy. "Many retailers have opened stores, but only

QUESTION

What company started out as a stagecoach operator in 1852 but today is recognized as a pioneer in Internet banking?

A: Wells Fargo & Co.

one has opened a country," Fields said in his announcement. "While Hudson Bay Co. Outfitters is inspired by our past, it is driven by the future..."—and the realization that yesterday is HBC's most valuable commodity.

AIRTOUCH

Keeping in Touch

Even a startup—a company without a storied past—can benefit from tracking its own history-in-the-making. By recording key decisions and capturing pivotal events as they occur, these businesses can show investors, customers and succeeding generations just what opportunity their founders saw, what niche they filled and what opposition they encountered.

AirTouch Communications Inc., a San Francisco-based wireless communications provider, doesn't have a lot of history, but it sure profits from what it does have.

The company began 14 years ago as a unit of telecommunications giant Pacific Telesis, which, on the eve of the 1984 Los Angeles Olympic Games, foresaw a market for cellular telephones. Beginning with a core market of several thousand customers in greater Los Angeles, AirTouch has grown into a veritable giant, offering cellular telephone, paging and other personal communications services to millions of customers worldwide.

AirTouch evolved into a publicly

traded business (it spun off from PacTel in 1994), employing thousands of people around the world. And in a company where the age of the average employee is 32, AirTouch executives use the company's short history to demonstrate to newcomers just how quickly a young business can take advantage of emerging opportunities. This approach is in line with founder/CEO Sam Ginn's stated objective to differentiate AirTouch from AT&T and other telecom giants. "We want to position ourselves as the open, friendly, easy-to-do-business-with, young and aggressive [company]," Ginn recently told *The Atlanta Journal and Constitution*. "You call AirTouch, they respond."

Tracey Panek, a trained historian previously employed by the California State Archives, is AirTouch's corporate archivist. She was hired in 1995 by Ginn, who always envisioned AirTouch as a company whose story people would want to hear. "He saw that AirTouch as a company was going somewhere and that the history needs to be captured and shared [with new employees and customers]," Panek says.

So far, Panek has amassed a 2,000-entry archival database accessible to employees, and she regularly collects key documents and memorabilia from AirTouch executives to add to the collection. Panek's archival work was shared companywide in 1997 at a "Vision, Mission and Value Summit" in which employees came together to plot company strategy. A historic exhibit was put together showing a time line of key events in AirTouch history.

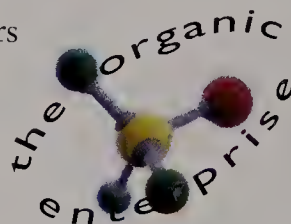
"This display was used as an integral part of making decisions about where we wanted to go," says Panek.

"People really liked to

focus on the developments and accomplishments of the

company. It helped them realize that the company didn't start where it is today."

AirTouch also created a special documentary video, *Made in California*, to educate new employees about the company. Jonathan Marshall, a new recruit who joined AirTouch's public relations staff earlier this year, says the video helped him develop a sense of the com-



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pany's identity and mission. "It gives a sense of rootedness, which can be quite important," Marshall says. "For a company that wants to attract and retain employees in a competitive market, giving them a sense of rootedness does create an advantage."

One of the highlights of the film, Marshall says, is 30-year-old footage of an AT&T lineman, reminding everyone that that was once Sam Ginn. "For people used to seeing Sam Ginn as this distinguished corporate CEO, this film gives them a sense of the different qualities he brings to bear as CEO today," Marshall says. And underlying this image, of course, is the message that those who toil on the front lines today may be sitting in the boardroom tomorrow.

Made in California has aired on CNBC and on United Airlines flights, helping AirTouch develop brand recognition with potential customers and employees. "It distinguishes us," Tracey Panek says of the film. "It shows we do have a vision of the future, but we also understand the history that brought us here."

The CIO's Opportunity

The Information Age has thrown Motorola's historians for a loop.

In the old days, archivists had memos and correspondence. But those days are gone. "There *are* no memos, no correspondence anymore," Sharon Darling says. "People don't even write letters anymore. We're faced with the challenge of documenting a digital world." Motorola's historians haven't yet figured out how to overcome that obstacle, but Darling is hopeful that the company's newly appointed corporate CIO, Leslie Shroyer, will help the company come up with a solution.

To this point, few if any CIOs anywhere have concerned themselves with business history. The task—if performed at all—has been relegated to corporate archivists or to outside consultants. But as key business decisions increasingly are made and communi-

cated electronically, the CIO can play a powerful role in how future business histories are written and leveraged.

"The CIO role is the crucial role in the corporation," according to Phil Cantelon of History Associates. "No

QUESTION

What name is shared by both a famous anthropologist and sociologist and an unrelated Bavarian immigrant who founded one of America's most storied apparel manufacturers?

A: Levi Strauss and Claude-Levi Strauss

one else knows how to store and gain access to the new electronic records that are so critical to understanding the operations, administration and policies of a corporation."

At Motorola, for instance, archivist Mary Edith Arnold is trying to digitize the company's archives so that select information can be "pushed" onto the desktops of employees who might benefit from the knowledge. But to succeed, Arnold needs IS help to develop a system that will send the right information to the right people.

If CIOs rise to the challenge, they can become what Cantelon calls the "keepers of corporate history," providing valuable data and decision support for their colleagues. If they back away from the task, then it's back to Santayana. Except that companies might not just "repeat" or "repent" if they fail to learn from history; they just might *become* history. **CIO**

Senior Writer Tom Field can be reached at tfield@cio.com.



AirTouch Communications' corporate headquarters in San Francisco. As the 14-year-old company grew, it saw the history of its success as a tool to ensure the success of its future.



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billion corporation and the world's leading developer, producer and supplier of seeds, has incorporated new research technology and production methods

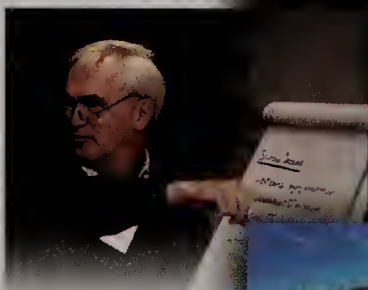
through substantial IT investments and marketing approaches across its 31 worldwide locations. We will also examine how Amazon.com continuously enriches its on-line retailing and services organization to better meet the needs of its 3 million active users in over 160 countries.

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SUNDAY, JANUARY 31

Registration and Breakfast

Golf Tournament at La Paloma Country Club

Transportation to La Paloma Country Club will run continuously starting at 10:30 a.m. from the main entrance of the Westin La Paloma.

Registration

Retreat Welcome

JOSEPH L. LEVY, *President, CEO and Group Publisher*
CIO Communications, Inc.

Retreat Introduction

F. WARREN MCFARLAN, *Senior Associate Dean,
Director of External Relations,
Albert H. Gordon Professor of Business Administration*
Harvard Business School

Retreat faculty will open the program and set goals and objectives.

Partners' Café Reception

Meet other participants and Retreat Partners in an informal living room setting.

MONDAY, FEBRUARY 1

Opening Remarks and KnowPulse PollSM

JOSEPH L. LEVY
Let your opinions be known through this well-reported research poll.

Amazon.com: Retailing and the Internet

BRANDT R. ALLEN
*James C. Wheat, Jr. Professor of Business Administration
Associate Dean for Executive Education
Darden Graduate School of Business Administration
Executive Director
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University of Virginia

Since its inception in 1995, Amazon.com has provided customers in more than 160 countries with an online source for millions of books, CDs, audio books, DVDs and computer games.

Amazon.com: Retailing and the Internet

BRANDT R. ALLEN
The realization of competition.

INDUSTRY BRIEFINGS

Discuss the latest thinking and newest approaches to information technology management with executives from our Partnering organizations.

Information Application Targets for the Early 21st Century

F. WARREN MCFARLAN
Discover the ways information technology will be applied in the next century.

Partners' Café Reception

TUESDAY, FEBRUARY 2

New IT-Enabled Organization Structures and the Roles of Intranets and Extranets

F. WARREN MCFARLAN
Examine ways new channels of communication evolve the structure of organizations.

Case Study: Pioneer Hi-Bred

F. WARREN MCFARLAN
Explore the business and technology issues facing this \$2 billion global seed company.

Case Study Workgroups

Participants will break into small groups to analyze the case.

New Paradigms for IT Service Sourcing

F. WARREN MCFARLAN
Observe the major shifts in access to unconventional IT service sourcing.

Enterprise Value Awards Reception

Meet the Awards winners.

Enterprise Value Awards Ceremony and Dinner

Join us in celebrating the Enterprise Value Awards recipients, proudly underwritten by AT&T Solutions.

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<i>Publisher</i>	<i>Editor in Chief</i>	<i>Editorial Director</i>
CIO magazine	CIO magazine	CIO magazine

WEDNESDAY, FEBRUARY 3

KnowPulse Poll Results

LEW MCCREARY

Case Study Workgroup Presentations and Discussion

JOHN JAMES
Senior Vice President
Pioneer Hi-Bred

THOMAS HANIGAN
Vice President and Director of Information Management
Pioneer Hi-Bred

F. WARREN MCFARLAN

Groups will present and discuss their solutions with Pioneer Hi-Bred executives.

Case Study Epilogue and Reflections on Pioneer Hi-Bred

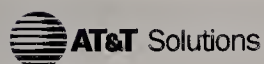
The case study company executives respond to breakout group solutions.

Delivering IT Results in the Information-Mediated Age

F. WARREN MCFARLAN

Summary

F. WARREN MCFARLAN



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Tivoli



GETTING TOGETHER

In a world of globalization and rapid change, the best route to business goals often involves a partnership

BY PETER FABRIS

NOT THAT LONG AGO, MOST COMPANIES strove to be as self-reliant as a Yankee farmer. But today, corporate partnerships are flourishing. More than 20,000 corporate alliances have been formed worldwide over the past two years, and according to studies by Booz, Allen & Hamilton, the number of alliances in the United States has grown by 25 percent each year since 1987.

Why are companies teaming up more today than ever before? Because well-constructed corporate alliances help partners pool expertise, enter new markets, share financial risks and get products and services to market faster. Those

READER ROI

More than ever before, corporate success rides on productive partnerships. In this story, readers will learn

- The best reasons to partner
- How to evaluate potential partners
- Common partnership blunders and how to avoid them

US Interactive's Mike Carter
keeps contractual requirements
of partnerships to a minimum.



PHOTO BY CHRIS CASABURI; LOGO IMAGE BY CRAIG ORSINI

benefits are particularly useful in an age rocked by technological innovation, global competition and downsizing.

When Speed Counts

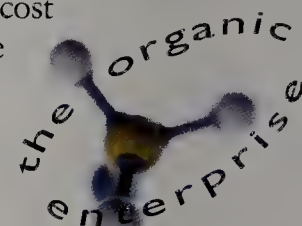
Enron Corp., an integrated Houston-based natural gas and electricity company, depends on partnerships to adapt to dramatic changes in its business. Until recently, utilities were essentially regional monopolies selling gas and electricity at prices fixed by government regulators. Now, thanks to deregulation, the gas industry is a free market and the electric industry is quickly following suit. California deregulated its electric utilities last year, and several other states will do likewise in 1999. Manufacturing plants and other commercial accounts—the largest energy users and the most lucrative customers—are up for grabs, looking for the best deal they can get. To win their business, Enron has to crank prices down, something the company can afford to do if they themselves bargain for cheaper energy and encourage their customers to conserve. Enron does this by installing energy-efficient lighting, HVAC and power supply systems in their customers' plants. It's a lot of work, but it pays off: Enron has cut the energy bills at some plants by more than a million dollars a year.

Throughout the day every day Enron buyers shop for the cheapest rates on electronic wholesale markets. Along with an elaborate energy trading operation, they balance power supply with customers' power demands hour by hour. Last year Enron decided that the best way to do that would be to build a system that could monitor customers' power usage from a central location in real-time.

"We could have bought the radios, the wireless technology and all that, but that's not our business," says Timothy Edward Vail, the Enron vice president in charge of energy technologies for Enron Energy Services. If the company had looked for a solution on its own, says Vail, it would have

taken several years and who knows how much money.

The answer to Enron's problem came in the form of a partnership with Motorola Inc., Asea Brown Boveri Ltd. (ABB) and three other companies, all of which were willing to build a first-of-its-kind system at a reduced cost to Enron but with the understanding that the completed system could be used as a kind of display model for the companies' wares.



POWER IN NUMBERS

By 2002, successful partners expect about 35 percent of their revenue to come from alliances. In the past 10 years

- Strategic alliances have yielded an ROI of nearly 17 percent among the top 2,000 companies in the world.
- The 25 companies most active in alliances achieved a 17.2 percent return on equity—40 percent more than the average of the Fortune 500.
- Since the early 1990s, the percentage of revenue that the 1,000 largest companies in the United States have earned from alliances has more than doubled to 21 percent in 1997.

Source: *Smart Alliances*, a Booz, Allen & Hamilton Strategy and Business book by John R. Harbison and Peter Pekar Jr.

All parties agreed and got down to work: Motorola designed wireless modems and radio transmitters; ABB built meters and Enron integrated and developed data collection software.

Today, some 1,200 meters are deployed, serving about 20 California companies. Enron has what it needs. Both Motorola and ABB use the model to sell metering systems to Enron's competitors. Vail, in charge of the effort for Enron, claims that Motorola's use of the system to sell to competitors is not a problem.

The real competitive advantage, he claims, lies in Enron's data collection software, and that's not going anywhere.

When You Really Must Know

Although US Interactive Inc. personnel are immersed in Internet software every day, the rapid development of technology challenges even them. To help keep current, the company has pulled together extranet-connected partnerships with a half-dozen Internet technology vendor partners. Using their Preferred Partner Network, US Interactive employees and vendor technicians share programming tips, map out development strategy and explore the intricacies of tuning applications for specific platforms. US Interactive learns how to build better Web sites, and partners get valuable feedback that they use to improve their products.

US Interactive describes the network as a loose partnership, and so far at least neither that com-

Enron's Timothy Vail decided that a partnership would help the company stay competitive.



PHOTO BY ROCKY KNETEN



**HAVE YOU
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NETWORK
BOTH
INSIDE AND OUT?**



The Internet is rapidly redefining the way organizations do business. New opportunities, however, do not come without new risks. Unless you secure your network before going "on-line," you're opening your doors to hackers, curiosity seekers and possibly foreign governments.

This is just the small part of the worry. It gets worse. According to a report conducted jointly by the Computer Security Institute and the FBI, federal agencies' financial losses due to unauthorized access rose by more than 3,000 percent from last year.

Secure Computing has a solid track record protecting private and government organizations with proven security solutions. Beginning with a thorough network assessment, Secure Computing will help define a security policy and implement solutions that are as practical as they are impenetrable – everything from firewalls and strong authentication to internet monitoring and content filtering tools.

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Infonet's Jose Collazo knows that partnerships will be essential to the fast-changing telecom industry.

pany nor its partners have haggled much over contractual technicalities. The contracts say—in legalese, of course—that vendors must provide training and support to US Interactive, and in turn they can print US Interactive's logo on their marketing brochures. There are no specifics about how the partnerships operate day to day. "I don't want to have to manage a whole lot of [contractual] requirements," says Mike Carter, director of corporate marketing for US Interactive in New York City.

The kind of knowledge sharing that takes place between partners is essential to projects built for customers such as Dairy Farm International, a \$10 billion Hong Kong-based food wholesaler that hopes to sell groceries on the Internet. Because of the newness of Web retailing, Dairy Farm is not just selling groceries; it is selling the experience of buying groceries on the Web, and the ease of that experience is crucial to their success. While they were building the Dairy Farm site, US Interactive technicians collaborated closely with Microsoft Corp.'s engineers. Rather than rely on its own technicians to tune servers, US Interactive has the people who know server technology do it. US Interactive concentrated on what it knows best: integrating and customiz-

ing software to make Web shopping appealing.

US Interactive's vendor partnerships continue to pay off after sites go live. During site development, US Interactive developers get to know the names of engineers at Microsoft, Open Market Inc., Pandesic LLC and other vendors. Months later, when a developer needs advice on tuning a beta version of the latest Microsoft Web server in a hurry, he can contact a Microsoft engineer directly. Though vendors rarely admit it, partners tend to get quicker responses to technical questions than the average schmoe.

When You Can't Get There from Here

Infonet Services Corp., a 30-year-old telecommunications services firm based in El Segundo, Calif., wanted to conquer the world but knew it couldn't do it alone. So the company formed partnerships with telephone companies in 59 countries. The best way for the company to enter new countries quickly was clearly to partner with carriers with broad market presence in their territories, says Jose Collazo, Infonet's chairman and president. His company sells high-tech frame relay, remote access, global Internet and intranet connectivity and integrated voice services to its telecom partners which often lack the expertise to do so. The carriers resell the new services at a profit.

So far Infonet's partnerships have served all parties well: Infonet leverages its partners' market presence and brand-name recognition while partners benefit by acquiring new services to offer their customers without having to invest in technology development themselves.

"No one company can provide it all," Collazo says. "Technology and the business are changing too fast." In telecommunications, firms that offer new services faster through partnerships have an edge over those that try to do it all solo.

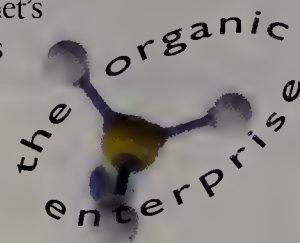
Collazo says it would cost Infonet hundreds of millions of dollars to hire marketing staff and promote its products on its own in so many countries. Going it alone, he says, was never really an option.

Bumps and All

Making partnerships work over the long haul isn't easy. Glen A. Allmendinger, president of Boston-based Harbor Research Inc., a

consultancy specializing in high-tech alliances, says that half of all partnerships never live up to expectations. Common missteps, says Allmendinger, include mismatched goals, insufficient commitment, inability to adjust the relationship to new business realities and flat out neglect by upper management.

"The most common mistake is a failure up front to clearly articulate the value proposition of the alliance," says John R.



DUE DILIGENCE

When defining each partner's roll in an alliance, answer these critical questions:

- What should be the alliance's specific charter in terms of market or technology focus and development?
- How will management control be configured? How and by whom will key managers be chosen?
- What indicators should be used to evaluate the alliance's performance and individual objectives of the individual parties?
- What specific options should be established for altering or abolishing the alliance and how should assets be valued and distributed?

Source: "Exaggerated Expectations: The Failure of Strategic Alliances," a report by Boston-based Harbor Research Inc., www.harbor-research.com.



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Harbison, vice president and leader of Booz, Allen & Hamilton's strategic alliance practice in Los Angeles. Harbison says that, while it's not vital that each partner's goals be identical, each must be committed to a common outcome.

Enron's remote metering alliance with Motorola is a good example. Motorola's objective was to develop new markets for its wireless modems—not to cut electric bills. Before anything was signed, Vail had to be sure all partners really gave a hoot about the project. He spent nine months flying around the country for face-to-face meetings and rounds of golf to get a better understanding of the commitment of his prospective partners.

US Interactive sizes up potential partners, too, but it does so by gathering cross-functional teams from both organizations to answer several key questions including:

- Is the prospective partner's technology best-of-breed?
- Is it fiscally healthy?
- Is there a cultural fit between us and them?

Answering the first question is IS's job. "I don't want to take on a partner if our internal people don't believe in their technology," Carter says. Evaluating the fiscal health of a potential partner comes down to examining financial statements. Is the company well capitalized? Is it profitable? If it's a startup, is it well funded by venture capitalists? That's a job for financial analysts and line-of-business executives.

Ascertaining cultural compatibility is trickier. For US Interactive, heavily bureaucratic cultures that have rigid chains of command would not be a good match, Carter says. US Interactive technicians don't want to wait days for a programming bug fix to be rubber-stamped by a manager.

For companies partnering with foreign businesses, cultural compatibility takes on additional meaning. Language differences are the most obvious barriers, but any company that can't leap that hurdle isn't ready for the global marketplace.

Other cultural issues may not be immediately apparent. Corning Inc., a company that has built successful alliances for over 70 years, was a few years into a highly successful joint venture with Korean conglomerate Samsung when it encountered a cultural land mine. The two companies formed Samsung Corning Co. Ltd. to manufacture cathode ray tubes for South Korean display terminal and television manufacturers. The companies split capital investment and profits fifty-fifty.



Corning's Peter Booth worked out a compromise when philosophical differences threatened a partnership with Samsung.

When the business became profitable, Corning wanted to issue dividends to stockholders. Samsung balked. Korean companies rarely gave out dividends, preferring to roll profits back into the business to boost market share.

Neither company had been aware of this philosophical divide when the partnership began, and the issue could have been divisive. The two sides worked out a compromise, says Peter W. Booth, a Corning senior vice president of strategy and development. They agreed to grant dividends, albeit smaller ones than Corning had originally proposed. "Nowadays," says Booth, "before we

enter a venture of that sort, we would tend to hammer out the dividend policy in advance."

Because globalization and technology gains are not about to slow down, most observers think the number of partnerships will continue to grow.

"This is a permanent trend," says Booz Allen's Harbison. "This is not a fad." **CIO**

Senior Writer Peter Fabris can be reached via e-mail at pfabris@cio.com.

QUITTERS SOMETIMES WIN

In partnerships involving shared investment, it's important to plan how to end the undertaking if it starts to go sour. How do you divide the assets when you decide to call it quits? Figure that out before you sign the agreement, experts advise.

And know when to call it quits.

Glen A. Allmendinger, president of Harbor Research Inc. in Boston, says that many American businesses are far too reluctant to end an alliance because breaking up is considered a failure. Better to get out, says Allmendinger, when the getting's good.

—P. Fabris



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THE CORPORATE SKELETON

The company fit for the new millennium needs a strong frame to support its heart and muscle

BY DEREK SLATER

READER ROI

In this examination of infrastructures built for corporate deftness, readers will learn

- Technical considerations for tailoring infrastructure
- How data is part of infrastructure
- Options for organizing personnel

It IS AN ENTICING VISION: THE LIVING COMPANY, ONE that creates and brings to market new products overnight, one that changes business processes or practices in a proverbial heartbeat to meet new market demands or ward off competitive challenges. Creating a corporate culture that can absorb and thrive in all that turbulence will be challenge enough. The sad truth, though, is that IT infrastructures—networks, servers, applications—are the real roadblocks keeping such daydreams from becoming reality at most companies. Computers are supposed to make business easier, but the way they are hardwired together often makes business flexibility much, much harder.

The company that is truly “organic,” adaptive or evolutionary—heck, even just breathing—in the next century will have built a corporate information backbone that helps foster agility rather than hinder it. From a technology standpoint, such infrastructures

will not look the same for everyone. Some forward-thinking CIOs today envision fat network pipes and thin clients; others talk about message-oriented middleware and object request brokers; still others think of off-the-shelf components and Web-enabled-everything. Whatever the configuration, conforming the technology to the right business goals is paramount. "What's difficult is aligning infrastructure with business strategy," says Peter Weill, director of the Center for Management of Information Technology at the University of Melbourne's business school in Australia. "The average life of a business strategy is less than 12 months, whereas an IT infrastructure typically has to last from 5 to 7 years. And some database infrastructures have to last 10 years or more."

While business strategies also vary widely, popular themes emerge for competing in the coming years. Sugarplums commonly dancing in CIOs' heads include the ability to change business processes or at least add application functionality more or less instantly. And to give customers (whether external or internal) more or less instant access to information.

Technologies—and the corporate organizational structures to support them—are slowly evolving that will help today's companies take a few significant steps on the road to a living, adaptive infrastructure.

Get a Backbone

Some parts of the infrastructure equation are fairly straightforward. Two basics of IT are network bandwidth and processing power, and the way to an adaptive infrastructure is to get lots of each. In large companies, standardizing disparate network technologies is a big step toward creating a more flexible, responsive infrastructure. Aerospace giant Lockheed Martin Corp. is three years into an enterprisewide standardization initiative; acquisitions throughout the defense industry's consolidation period left Lockheed with around 75 "heritage" networks, a mishmash of topologies and technologies. Now in place is an enterprise asynchronous transfer mode (ATM) network that "gives four times the capacity at less cost," according to Paul Pelotte, vice

president of distributed computing and telecommunications for Lockheed Martin Enterprise Information Systems (LMEIS) headquartered in Orlando,

horsepower on the countertops. "You don't want to put systems in your store that have expected moments of failure because the people in the store aren't

"SAP IS MOSTLY A DEFENSIVE
MOVE—IT BRINGS YOU UP TO
INDUSTRY STANDARD, BUT
IT SAYS YOU AREN'T GOING
TO USE IT FOR COMPETITIVE
ADVANTAGE."

—Peter Weill



Fla. Fewer constraints on the network provide elbow room for adding users, traffic or new applications.

In some instances sufficient bandwidth can replace processing power or at least relocate it. At Men's Wearhouse Inc., a retailer of men's clothing headquartered in Houston, the vision of the future includes centralized data processing with thin client machines in its 425-plus stores. Executive Vice President Harry Levy is overseeing the rewrite of the company's core store system in Java; the existing crop of dumb terminal cash registers will be replaced with network computer-type devices, connected by dedicated network lines to the servers in Houston. The goal is to create an application that is centrally controlled and flexible enough to allow Men's Wearhouse to expand into other geographical markets or even into other lines of retail. Despite ever-falling PC prices, Levy opted against putting heavy

equipped to deal with that. We don't have technical people, so we thought with PCs we were going to run into significant administrative and support problems," says Levy. For Men's Wearhouse, which has a traditionally lean IS operation, it makes sense to concentrate the processing in a place where it is relatively easy to keep an eye on the boxes and let bandwidth bring its power to the point of sale.

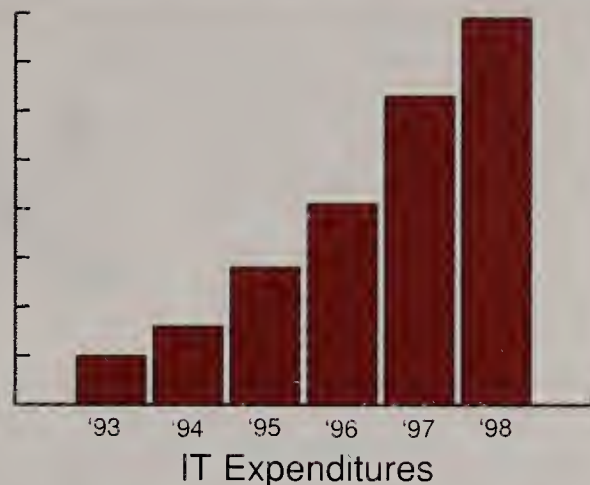
On the other hand, analysts at GartnerGroup Inc. suggest that beefing up bandwidth alone won't be in a company's long-term interest. Even the widest of pipes will get clogged as usage continues to amplify. These analysts predict instead the use of "intelligent networks" based on directory service technology, which will be able to identify users wherever they are and

prioritize bandwidth and power for the particular tasks they are executing.

Choosing a standard network technology or processing platform is not necessarily simple, but the decision to do it is in many ways more important than the particular technology chosen. The bigger trick with infrastructure is how to pay for it. An "anticipatory" infrastructure by definition means building capability or capacity ahead of actual need. Convincing business units to get out their wallets when there is no immediately definable payback is notoriously difficult. Tom Davenport, a professor of management informa-



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tion systems at Boston University School of Management and director of the Andersen Consulting Institute for Strategic Change, talks about "stealth infrastructure" as one solution IS organizations have adopted—building capacity over time by simply buying slightly more for each individual project than that particular project actually requires. However, that practice may not be necessary for long, as Davenport says it is becoming more economical on the vendors' side to build the highest level of functionality into *all* their products and then enable or disable features via software at customer request. In that case, additional server or network capacity is essentially just a phone call away.

Application infrastructure can be more difficult than network infrastructure. If a company wants to change its billing procedure, for example, how quickly can the financial software be changed to allow that? If a new customer service application is needed, will it integrate with the data formats and query facilities of the existing databases? Application infrastructure today is more often an inhibitor of change than an enabler. The common scenario: With the central IT budget under pressure, business units are more likely to take IT purchasing decisions under their own control, resulting in stovepiped applications and a mélange of platforms and applications that have more communication problems than a bad marriage. The gridlock thus created makes it hard to deliver new applications, which in turn stifles the company's ability to implement new business processes.

Currently there are two schools of thought about how to build an application infrastructure that can keep pace with business change. One is to buy everything, including all applications, off the shelf and let the software vendors worry about integrating. With enterprise resource planning (ERP) software, much of the application functionality is already built in, and changing processes is (at least in theory) a matter of flipping switches in the software setup. ERP software is the hottest thing going and "the very existence of ERP systems sort of implies that most

people are not going to build their own applications anyway," says Davenport. ERP vendors, who already handle fundamental corporate functions like finance, manufacturing and human resources, are feverishly buying or building more and more functionality for their packages, including supply chain management, sales-force automation and a raft of other capabilities.

The alternative school of thought is to build a completely independent layer of middleware to handle all communication among applications and data sources. Usually such a layer is based on object request broker (ORB) technology or message-oriented middleware (MOM), both of which are available in increasingly robust and successful commercial

supporters—and detractors. The rap on the prefabricated ERP approach is that it puts all competitors on essentially the same ground. "I'm not a great fan of this lemminglike trend to ERP," says Weill. "SAP is mostly a defensive move—it brings you up to industry standard, but it says you aren't going to use IT for competitive advantage," he says. In some industries (notably low-margin businesses), where IT is not a key differentiator among competitors, that makes perfect sense. In other arenas—Weill cites the financial industry as an example—it could be an enormous mistake. The middleware solutions, on the other hand, have been hyped for a number of years without breaking into the



“THE KEY, FUNDAMENTAL THING COMPANIES ARE GOING TO NEED IS A CENTRALIZED CUSTOMER DATA SET.”

—Laurence Bunin

packages. For example, International Data Corp. of Framingham, Mass. (a sister company of CIO Communications Inc.), reports that the message-oriented middleware market grew by more than 60 percent in 1997 and will hike up to nearly \$2.5 billion by 2002. The basic idea behind these technologies is that applications communicate with each other through a third party, a broker. Application A can work with Applications B, C and D—all of which may reside on different platforms and communicate over different network protocols—without needing a separate interface for each, providing each one has a single interface to the central broker. As long as any new corporate application—whether packaged or home-grown—can communicate with the middleware, integration is relatively straightforward.

Both approaches have their ardent

mainstream as quickly as promised; Davenport repeats a wry maxim, "If object-oriented were going to change our lives, it would have done so already." The truth, of course, is that each approach may be right for a different set of businesses.

The Heart of the Business

Of course all these applications need something to work with—data. And while most people don't think of data as part of the infrastructure per se, that's a mistake, according to Laurence Bunin, CEO of the consultancy Handshake Dynamics LLC in New York City. "The key, fundamental thing companies are going to need is a centralized customer data set," says Bunin. If strategic relationships with customers will be the basis for competition in the coming years, each company needs to formalize the methods and tools with which



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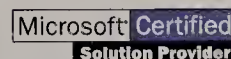
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that data is captured, centralized and analyzed. One of Bunin's clients is a power company that wants to be able to centralize and analyze the power usage of major corporate customers, with an eye toward creating flexible and attractive pricing packages. Attaining that level of business flexibility, where prices and products can be individualized for each customer, requires walking before running. Bunin says his clients usually start treating data as infrastructure in a single departmental or business unit first. One group within the company builds an application that utilizes customer data in a new way, and other groups, seeing the application's success, jump on board.

Data warehousing and data mining are current technologies for putting this data set in place, and the Web is gaining momentum as the method by which users access the data. Weill argues that the centralized customer data set is not for everyone: "If you take a company that has seven or eight business units that aren't particularly related, you wouldn't need it," he says. Interestingly, for those businesses that do need it, some pundits express concern that the rush to ERP may be a serious mistake, ERP being notoriously balky in the area of making customer data accessible and digestible. While Davenport thinks this weakness will be resolved quickly, Bunin says, "Yes, but not in our lifetime."

Human Powered

Pelotte's ultimate goal is for technology to manage technology. In other words, the ideal infrastructure would essentially run itself with a minimum of human intervention. But while network and systems management tools grow ever more capable, it remains clear that the human element will dominate for a long time to come—no network is adaptive and anticipatory when it is down. Thus the IS team itself is a cru-

cial part of the adaptive infrastructure.

No single organizational structure fits every IS department, but the theme among forward-looking IS groups is to find the right balance between decen-

not to the IS function.

In larger corporations, centralization seems better suited to manage resources and track projects and workflow. Lockheed's LMEIS is a separate com-

THERE'S AS MUCH FAD-FOLLOWING GOING ON IN I.T. ORGANIZATIONAL STRUCTURES AS THERE IS ELSEWHERE.

—Jerrold Grochow

tralization and centralization. In any given year, many IS organizations seem to gravitate en masse toward one of these poles or the other. "I think there's as much fad-following going on in IT organizational structures as there is elsewhere in management," says Jerrold Grochow, vice president of the corporate technology group at American Management Systems Inc. in Fairfax, Va. United Press International (UPI) is a relatively small company that, owing to financial extremis, got the chance to remake its entire organizational structure from scratch over the past 18 months (see "News Made to Order," CIO Section 1, July 15, 1998). Then-CIO Andrew Meldrum and then-CEO James Adams designed their ideal, ultimately flexible organizational structure with the goal of being able to create new information-based products—news packages, photo clips and the like—on the fly. IS employees at UPI are assigned to one of four "market teams," which are defined by the markets they serve and which comprise representatives from each of the traditional vertical functions (marketing, editorial, sales, finance, technology and others). These teams have clearly mapped out their existing skill sets; when customers request a new product or service, the UPI teams can quickly determine whether they can meet the request. The IS group also meets separately from time to time in order to see what common requests for new skills are coming in. However, the group's first allegiance is to the market teams,

pany of more than 4,000 employees serving Lockheed's numerous business units. Pelotte and company have created three Enterprise Service Centers, one at LMEIS headquarters, the others in Sunnyvale, Calif., and Denver, to "follow the sun," providing system support around the clock. In addition, most LMEIS workers are dispersed throughout Lockheed's business locations to handle problems onsite. The centralized service centers help Pelotte

determine which services can be handled on an enterprisewide basis with concomitant economies of scale.

Despite all the organizational and technical progress, the visions of instant information and transformation are elusive sugarplums indeed—the stuff of dreams for most companies today. As Davenport says, "I don't know anyone who has anything remotely resembling" those two capabilities right now. Still, some already achieve excellent payback for the time and money invested in building a better IT backbone. Weill's research finds that companies with excellent links between infrastructure capability and business goals deliver a premium of up to 40 percent in business performance over the run of the mill organization. About one company in five achieves that infrastructure-based performance boost, according to Weill. Making the right infrastructure decisions now, with the long term in mind, can help smart companies move into that elite group tomorrow. **CIO**

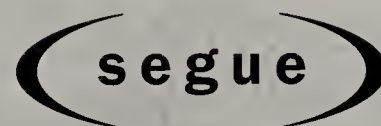
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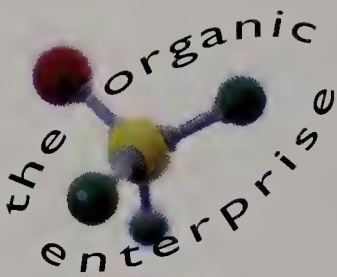


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THE KNOWLEDGE FACTOR

Companies in the Information Age need to systematically manage what they know

BY PERRY GLASSER

BOTH INSIDE AND OUTSIDE A COMPANY'S GATES, GREAT things often begin at those fortunate moments when people with knowledge and vision pool their dreams. A perfect example: WorldCom Inc., the company that merged with MCI to form MCI WorldCom Inc., now the fourth-largest telecommunications company in the world, had its origins at a coffee shop in Hattiesburg, Miss., when four executives who knew the business got together exactly one month after AT&T Corp.'s long-distance monopoly was broken by antitrust laws. Luck or knowledge?

Of course, businesspeople can meet by design at regular times and places, but the spontaneous appearance of a group that can develop a shared vision has historically been the product of a chance meeting

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For Lotus Development Corp. CIO Chris Cournoyer, changing employee attitudes is an important component of knowledge management.

on the stairs, on the elevator, by the coffee machine or at the water cooler. Knowledge management proponents today believe that those chance interactions that mix and reformulate knowledge can and should be systematically encouraged. It can happen in one office, but time and geography are no longer constraints to collaborative work (see "Tool Box," Page 112). The creation of a profitable idea—like MCI WorldCom—always takes hard work but is never just dumb luck. Larry Prusak, executive director of IBM Corp.'s Institute for Knowledge Management in Waltham, Mass.,

says, "All of life and business is a game of odds. Just as

HR policies increase the odds of employee retention, and good customer service increases the odds toward repeat business, knowledge management is about increasing the odds toward knowledge being transferred, utilized and [contributing to] innovation."

Knowledge, the most important asset in any company, is the key to survival in the Information Age. Yet companies are stumped on how to manage something that cannot be quantified, let alone universally defined.

When it comes to mixing



CHANGING THE CULTURE

Tale 1. Lotus Development Corp.

With Lotus Notes on every desktop, Christine Cournoyer, the CIO of Lotus Development Corp., likes to brag that knowledge management works well at the Cambridge, Mass.-based company because "we have a robust infrastructure." But Lotus was encountering the same problems as many other companies that rely on tools without also taking a hard look at the corporate culture. Notes or not, employees were not regularly participating in online discussion groups or sharing lessons learned. As a vendor, there was a sense throughout Lotus that the company needed to experience exactly how a collaborative tool could create knowledge and how knowledge could in turn create change. If Lotus could not figure out how to maximize the use of knowledge harvested by its own product, what company could?

Cournoyer was part of a 25-member executive team that took an active role in Lotus's knowledge management initiative, which got off the ground two years ago. Cournoyer initially turned her attention to the customer support help desk, where personnel did a sufficient job logging calls but didn't always enter what they learned from customers into a common database. The business goal of logging the complaints was easy to define: By identifying recurring problems with software, Lotus could spot potential bugs early on that would result in better customer relations, more efficient response times and ultimately, increased sales and profits. "The [tactical] goal became to define 'data capture' as a fundamental part of people's jobs," Cournoyer says.

Cournoyer's IS department responded by creating an applet to make on-the-fly data capture easier for personnel. Now, no call to the support desk is deemed complete until personnel have entered the substance of the call in Notes. Their completion rate is a metric of their performance review, an incentive that acknowledges the human behavior element of the knowledge management problem.

Although unwilling to reveal exact metrics, Cournoyer will own up to the competitive value of knowledge management. "We've seen our customer support satisfaction increase significantly," she says.

—P. Glasser

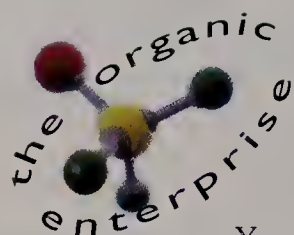


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and remixing people's knowledge, executives know what they want to have happen; they just don't know how to make it happen.

A 1997 report from the Ernst & Young Center for Business Innovation in Cambridge, Mass., and Business Intelligence Ltd. in London revealed that 94 percent of 431 organizations surveyed in Europe and the United States have executives who believe "it would be possible, through more deliberate management, to leverage the knowledge existing in [their organizations] to a higher degree." Yet, while there's a lot of faith in the concept of knowledge management, 71 percent of those same executives rated their businesses as average or worse at "embedding knowledge in processes, products and/or services." Knowledge management will remain an elusive goal until companies overcome the barriers—both organizational and otherwise—to instituting it.

While the severity of the obstacles to adopting effective knowledge management practices depends on how knowledge-intensive an organization is (a software company ranks high on the knowledge scale, for example, and views knowledge as a key differentiator), there are common sticking points to getting started. (For examples of how some companies are managing knowledge, see the tales throughout this story.) CIOs charged with a knowledge management project can benefit by carefully assessing the four areas discussed here that traditionally present challenges to any knowledge management effort.

NUMBER 1 CULTURE

TEAM MANAGEMENT SPECIALISTS and collaborative tools litter the landscape, but rugged individualism and entrepreneurial competition are entrenched human traits. While people may talk up team spirit, they also know that knowledge is power, and few are willing to give that up. The company that develops the right set of incentives for its employees to work collaboratively and share their knowledge will go a long way toward developing a successful knowledge management effort. According to Ernst & Young, 56 percent of executives identify "changing people's behavior" as the greatest single obstacle to knowledge management initiatives. As Debra Speight, vice president of information technology and CIO of Brookline, Mass.-based Harvard Pilgrim Health Care puts it, "Corporate America is just learning that people don't like to share what they know." So any knowledge management effort has to make sharing knowledge profitable, not just for the company but for the employees. All too often, companies pay for specific skills but give scant attention to compensating employees for what they know. Michael Fradette, a partner with Deloitte Consulting LLC in Boston and co-author with Steve Michaud of *The Power of Corporate Kinetics: Create the Self-Adapting, Self-Renewing, Instant-Action Enterprise* (Simon & Schuster, 1998) suggests tying compensation to behavior as well as

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Inspiration Software Inc.
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IBM Corp.
Armonk, N.Y.
www.knowledgex.com

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Visual RetrievalWare
Excalibur Technologies Corp.
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to performance. "Collaboration and sharing are types of behaviors that can be rewarded," Fradette says.

NUMBER

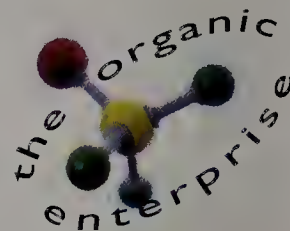
EVALUATING KNOWLEDGE 2

FIGURING A RETURN for knowledge management initiatives is like trying to calculate payback from providing employees with telephones, paper and pens. According to International and U.S. Chief Knowledge Officer Michael J. Turillo Jr. of KPMG Peat Marwick LLP, the consultancy invested \$40 million in a knowledge management initiative called KWorld during a five-month period in 1998. The investment included capital outlays for hardware, software and the development cost of executive and management time consumed by planning and testing the system for the New York City-based firm. Though satisfied with KWorld's early operation, a nagging concern for Turillo

remains finding a proper way to evaluate the information in KPMG's knowledge repository, the Global Knowledge Exchange. Assessing the worth of information is a crucial step if a company wants to refine its methods or create a reward system for the employees who have generated the "best" knowledge. Turillo thinks a simple hit count on information use reveals little about its worth. "I'm interested in quality," he says. "Who is using the information? Are they decision makers?" The company that tackles the valuation issue will have both a head start on the employee incentive problem and an edge on refining knowledge management processes for maximum profit.

can't be tabulated in rows or columns. Chris Newell, executive director of the Lotus Institute of Knowledge, a Cambridge, Mass.-based organization formed jointly by IBM and Lotus Development Corp.

to research knowledge management tools and methods, believes that companies engaging in knowledge management initiatives need to emphasize the human element. Such companies should think of themselves as "in the



GET SMARTER

There's general agreement on the hierarchy of business intelligence

DATA. Simple, indisputable facts. Companies with systems that gather transaction data are often pelted with so many facts that the stuff piles up like confetti after Lindbergh's parade. They don't call it "data glut" because it's pretty. Often data is conveniently delivered in row-column formats. Your company owns its own data.

Data Example: Twenty percent of all widgets are sold in Minneapolis.

INFORMATION. Mix two or more facts and cook up a new fact; you are creating information. A query to a database will put data into new juxtapositions, and a discriminating mind or a well-programmed robot will see this as new information. People hire assistants and subscribe to services that promise to filter out irrelevance and push them information they can use.

Information Example: The widgets sold in Minneapolis are bought by new parents 9 times out of 10.

KNOWLEDGE. Aggregated information does not morph into knowledge. Knowledge bubbles up from hands-on or brains-on work performed by people in the field. Never forget, however, that knowledge is also a theory of how things can and will work that can change with time and place.

Knowledge Example: If we target new parents in Minneapolis, we will double our sales of widgets; if we try this in Osaka, we will take a bath.

WISDOM. Practices that work in many times and places constitute wisdom. Whether an idea is wise or merely knowledgeable makes for sharp dinner conversation. In business, wisdom takes the form of accurately assessing knowledge and designing a plan of action.

Wisdom Example: Since in all times and all places, people will always need widgets, we will strive to manufacture and sell the finest widgets we can.

—P. Glasser

NUMBER

3 PROCESSING KNOWLEDGE

THE DARK SWAMP that may engulf knowledge management is discovering the techniques of how to gather, store, process and distribute the kind of knowledge that



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SEE FARTHER

An intranet is one tool Michael Turillo uses to manage knowledge at KPMG Peat Marwick.

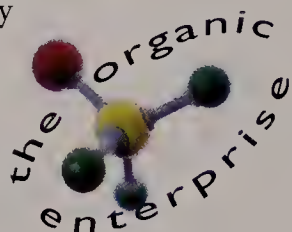
human processing business, not the information processing business," he says. Effective knowledge management must allow organizations not only to stockpile and access information but to get at the history of how decisions were reached as well.

ACTING ON KNOWLEDGE NUMBER 4

ANY MANAGERIAL theory that does not create change is nothing more than an academic exercise. Technology has eradicated time and geography as inhibitors to collaborative work, but only an organization's commitment to change based on knowledge management will lead to the kind of learning and innovation that contributes to competitive advantage. Turning knowledge into action first requires gleaning the information that has meaning and relevance for a particular organization. In the military, for example, managing knowledge is often less

about balance sheets than it is about life and death. That's why the Department of Defense (DoD) interviews soldiers following combat situations and catalogs the lessons learned in a shared database. The DoD believes that distributing the so-called ground truth to soldiers is not only worth the storage and bandwidth costs but also is—for obvious reasons—incredibly meaningful. (See "Armed with Intelligence," *CIO*, August 1997.) And just as soldiers change their behavior based on lessons learned by others, organizations can use knowledge to continually adapt to the ever-changing battleground of business.

Using knowledge to adapt and grow is a



PROCESSING KNOWLEDGE

Tale 2. KPMG Peat Marwick LLP

The merger of Peat Marwick International and Klynveld Main Goerdeler in 1987 produced a babel of cultures in the American, British, Dutch and German partnership known today as KPMG Peat Marwick LLP. "KPMG was not so much a global company as it was a collection of geographically identified franchises," says International and U.S. Chief Knowledge Officer Michael J. Turillo Jr.

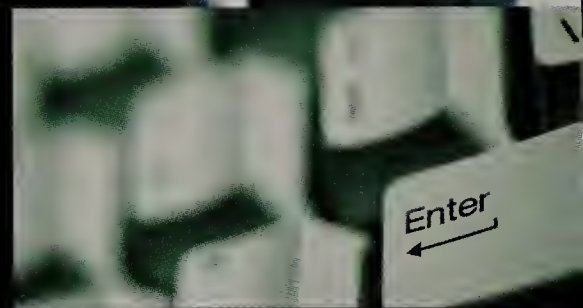
KWorld—KPMG's knowledge intranet that started in 1997 with a projected completion date in early 1999—is the company's strategic bet to make all its pieces work together. The knowledge base design respects the legacy of KPMG's consulting practice, which remains organized around product, industry and geography. KPMG users once had to physically locate the work of a specialist senior partner and potentially read through dozens of documents. With KWorld, expert information is available on the desktop. Extracting in-house knowledge about ERP installations for the petroleum industry in Germany, for example, is now only a few mouse clicks away.

Keeping the repository current occupies 15 full-time "knowledge editors" in KPMG's New York City office. The editors capture non-quantifiable knowledge from feeds that zap as many as 8,000 published papers, speeches, books and magazine articles across their screens daily.

—P. Glasser

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PUTTING A VALUE ON KNOWLEDGE

Tale 3. Harvard Pilgrim Health Care

Last spring Debra Speight, vice president of information technology and CIO at Harvard Pilgrim Health Care (HPHC) in Brookline, Mass., grew concerned about her IS department's turnover problems. At that time, while she realized she couldn't always afford to retain employees, she was determined to at least hold on to the knowledge they gained while on the job. Speight now pays "knowledge bounties" of between \$1,000 and \$5,000 to departing IS employees based on the value of the knowledge they leave behind. Before they move on, departing IS employees write a document that serves as the outline for a conversation with a panel of peers, a supervisor and senior-level managers, who assess the value of the knowledge and award the bounty. Neatness does not count. "We're interested only in the value of the content," Speight says.

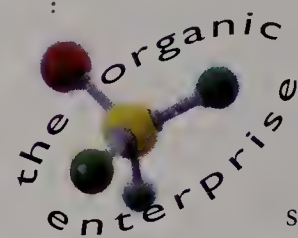
One insight gleaned from an exit interview revealed that computer time on the IBM AS/400 is prioritized based on the working relationships among senior executives, departments and the IS group rather than on time-honored traditions that had little to do with how work actually gets done. "The exit interview is a time when people can say what they want to say without risk," she says. The format that captured knowledge takes is a crucial point for Speight because she knows that different people learn in different ways. "For me, knowledge is tactile—it's the living part of the organization," she says. "Some people learn better from what they hear, some from what they read and some from what they see." To that end, HPHC is working toward an anecdotal feedback loop that will deliver sound and images to desktops via the company intranet.

—P. Glasser

Knowledge is a living, tactile thing, says Debra Speight, CIO of Harvard Pilgrim Health Care.

fundamental principle of organic life. Yet many executives resist the idea of managing knowledge like other assets within a company. There's little doubt that knowledge management has about it the faint odor of the management theory *du jour* (see "Five Uneasy Pieces, Part 2," CIO, June 1, 1996). At a recent conference on knowledge management, Bob Guns, the author of *The Faster Learning Organization: Gain and Sustain the Competitive Edge* (Simon & Schuster, 1998), asked a seminar of executive believers, "What knowledge management strategy are you working on?" A voice from the rear of the room replied, "I'm trying to talk about it so my boss doesn't gag."

To combat that kind of ingrained skepticism, companies often relegate knowledge management projects to a dedicated team. Such pigeonholing courts failure. To succeed at effectively managing knowledge, companies have to incorporate knowledge manage-



ment completely into the cultural fabric, a shift that requires changes in both organizational and personal philosophy. Those

changes are more profound than any state-of-the-art IT system can hope to deliver. Changing fundamental behavior is always a tough prospect, but it's a necessary hurdle that companies must overcome. In the burgeoning knowledge economy, the companies that quickly and efficiently recognize, collect, store and distribute their knowledge assets throughout the organization will triumph. **CIO**

Features Editor Perry Glasser can be reached at glasser@cio.com.

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The Externalization Imperative

Success in the 21st century will require new levels of corporate candor

DALE KUTNICK

EXTERNALIZATION IS RAPIDLY becoming a corporate mantra. The ability to connect quickly and meaningfully with business partners and customers to improve the movement and potential quality of goods and services is now a competitive imperative. Enterprises have always had to communicate beyond their borders, but relationships and information feedback loops have been erratic at best. Information technology to facilitate communication is still immature but corporate cultures themselves have proved the major roadblock to broader, deeper relationships. Indeed, enterprises have been quite insular in sharing internal information. They felt their processes gave them a competitive advantage and wanted to protect them.

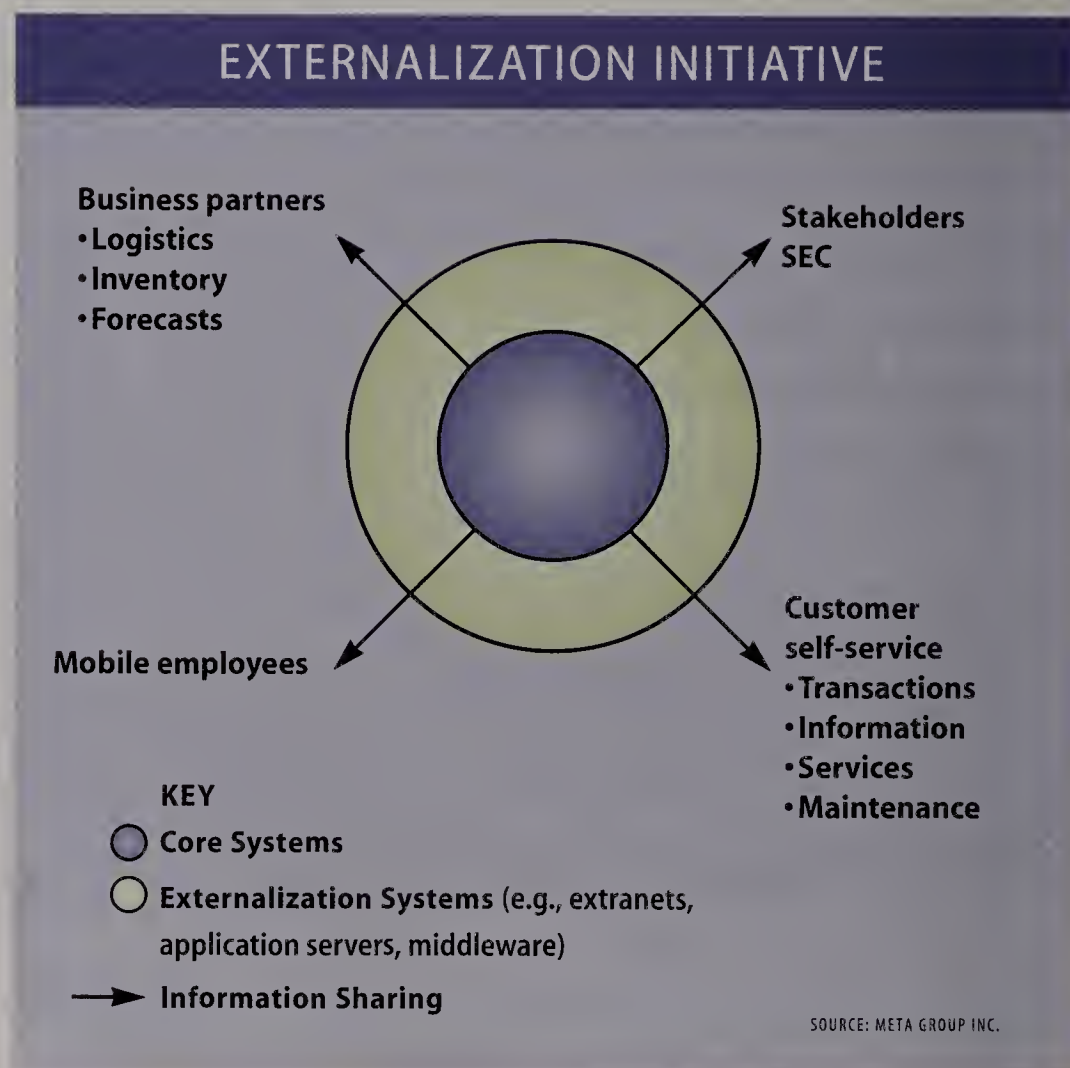
In the past, most enterprises hid their information behind layers of bureaucracy and secrecy. But we're entering a new phase. I don't believe it is exaggerating to call it a business revolution. In the century ahead, companies increasingly will be judged and even valued by how well they can "expose" this information to facilitate collaboration on products, customer service, marketing, sales, distribution or manufacturing. This effort to externalize (see "Externalization Initiative," right) will be measured by what we have dubbed "the collaborative coeffi-

cient" (see "Collaborative Coefficient," page 122), which reflects the capability of an enterprise to partner with other enterprises. Ultimately, it is a measure of agility.

Companies are rapidly "devolving" from self-contained, vertically integrated organizations to more virtual

entities that rely on business partners to fulfill major parts of their supply chains. Driving this devolution are competitive forces that attack the soft underbelly of large enterprises—that is, their inefficient groups, bureaucratic processes or weak product supply chains. The chief weapon here is disintermediation (eliminating the middleman) to become more cost-effective or responsive. Amazon.com Inc. and 1-800-FLOWERS Inc. have used this approach well. Disintermediation is spurred by the networked economy enabling companies to focus on providing a specific component in a supply chain—whether it be a manufactured part or subassembly, customer service or distribution—and become a best-of-breed partner in a total solution.

Some companies will try to maintain their own supply chain components. They will be successful only if each component is among the best of



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breed when faced with competition. Many PC companies now use Federal Express Corp., UPS (United Parcel Service of America Inc.) or DHL Airways to pick up and deliver broken or repaired units. Doing it themselves, most direct sellers would incur additional costs and delays, which would inconvenience and alienate customers. With delivery trucks traveling throughout the world all day every day, the distribution companies' efficiency is tough to beat.

Twenty-first Century Keiretsu

The externalization imperative will manifest itself in more collaboration between enterprises, with the most successful ones developing "keiretsus" that enable greater focus and business discipline by their partners. *Keiretsu* is the term for the postwar Japanese model of intercompany cooperation, in which vertically linked industrial conglomerates were typically linked horizontally via banks and trading companies. Keiretsus historically were based on tradition, cross-investment and hidden (personal) agreements. But the 21st century keiretsus will be ephemeral and open, loosely coupled but tightly inte-

grated when necessary, and with generally little or no cross-ownership. They will be built on cooperation—especially information sharing—along and across interdependent supply chains. Competitors may even share a common keiretsu. In any case, membership will need to be reviewed periodically, based on performance and business goals. If a member's performance lags compared with other suppliers, or if new directions are desirable, relationships may change. The relationship of Dell Computer Corp. or Compaq Computer Corp. with Seagate Technology Inc., Intel Corp., Microsoft Corp., 3Com Corp. and others represents the beginning of such modern keiretsus.

In the effort to externalize, companies must rethink their current supply chains and make sure their business components can be integrated easily across enterprises. They will do this by sharing knowledge about their processes, then engaging and enveloping their partners' processes. The knowledge capital of such relationships will have a specific, measurable value that can be balanced against switching costs.

Reordering, eliminating and integrating supply chain components to improve

efficiency, or "reintermediation," represents a new business order with the potential to create new products, services and markets. It also forces enterprises to examine externalization. A compelling example of this is EMC Corp., which designs, sells and services enterprise storage and retrieval systems. While IBM Corp. is its largest, fiercest competitor in the DASD (direct access storage device) market, EMC purchases key components such as the disk drive assembly from IBM. IBM competes with other disk drive suppliers on price, reliability and availability. The most successful PC suppliers, Dell and Compaq, are also virtual companies. Their expertise is packaging and marketing; they manufacture almost none of the components that go into their "boxes."

Virtual companies and reintermediation will become the primary mode for 21st century commerce. Financial services providers such as banks and insurance companies are already in the cross hairs of companies like Charles Schwab & Co. Inc. and Fidelity Investments. Beyond their own businesses, these two companies are exploiting their strong customer relationships, financial muscle and distribution channels to sell other companies' "wholesale" financial products through their channels.

Intercompany connectivity must be far deeper than the simple EDI that some companies have already used. Internet and Web connectivity and presentation standards will help and are becoming pervasive. Still, there will be tremendous IT challenges in security, bandwidth availability, server scaling, application interfaces, data access and support.

Partners must have a common, consistent view of end-product demand and establish standards for mass customization. The goal throughout the supply chain is near-zero inventory and constant status, requiring partners' information systems to communicate at a high level. For instance, Dell keeps inventories low by informing suppliers when one of their components has been ordered. The suppliers can in turn coordinate the manufacturing, scheduling and distribution of those components.

The IT Burden

Externalization will place a heavy burden on companies' IT groups and on vir-

COLLABORATIVE COEFFICIENT

This checklist outlines requirements for maximum corporate agility

General business requirements:

- Define clearly products/services and their component boundaries
- Identify specific product/service component costs—fully allocated
- Delineate business process relationships
- Establish an information value chain model; define linkages
- Describe customer relationships
- Specify business discipline and capabilities
- Reorganize/reassign/mobilize human capital
- Articulate intellectual capital assets—and value
- Assess risk and access capital quickly

IT-specific requirements:

- Define information policy and governance
- Describe clearly IT architecture and infrastructure
- Explain value chain automation
- Detail IT organization structure, competencies, agility
- Identify performance/business effectiveness/alignment
- Delineate operating procedures

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tually all IT systems because information will be a critical linchpin. Indeed, the information supply chain between companies will challenge physical distribution channels, forcing more planning and process integration before goods are moved or even manufactured. Consequently, information about transactions will often be more valuable than the transaction

perusing. This information enables better targeted marketing and selling. In this environment, information sharing within a well-defined information constituency will often outweigh intracompany information requirements.

In the networked economy new forms of revenue generation, along with increased channel efficiency, will make

ness of an energy utility will have a greater information-sharing affinity with its suppliers of raw materials and generators than it will with its retail counterparts, which will increasingly buy energy through "energy traders."

The networked economy will emphasize business agility (for collaboration, mergers-acquisitions and divestitures) and demand new IT infrastructures to support it. CIOs must take a leadership position in helping to craft this new environment and these evolving information process and product issues. To do so will require a business-savvy, innovative IT organization that can sell its vision, fracture dysfunctional business processes and reintermediate with internal and external partners. The IT organization in general, and CIOs in particular, are in a unique position to lead this revolution. **CIO**

Dale Kutnick, president, CEO and co-research director at Meta Group, can be reached at dalekutnick@metagroup.com.

Partnerships will increasingly be formed around external information constituencies.

themselves. This is already true in some settings: for example, Dun and Bradstreet Corp. and Equifax Inc. make billions of dollars selling information about business and customer transactions. New cyber-companies such as DoubleClick Inc. or LinkExchange Inc. enable Web advertisers and product purveyors to capture information about who is visiting their sites, for how long and what they're

electronic commerce and externalization the focus of IT spending. By 2003 we believe electronic commerce will be a \$300 billion market, about 25 percent of the total IT market. Partnerships will increasingly be formed around external information constituencies that are part of a 21st century keiretsu rather than artificial internal constituencies. For example, the electricity generation busi-

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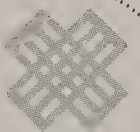
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As the Y2K deadline approaches, don't overlook PCs

BY PEGGY KING

ALL YEAR LONG YOU HAVE been hearing the din of various Y2K alarm clocks going off at once. Through the diligent efforts of your Y2K project management office and the rest of your staff, you've been able to turn off (or at least set the snooze feature for) the shrill, loud alarms emanating from the mainframe, old mini-computers and Unix server. But suddenly you can hear soft but incessant buzzing of hundreds of PCs filled with quirky BIOS chips, old spreadsheets and many less manageable but no less mission-critical applications. You can't go back to sleep—there's too much work and too little time.

Many organizations are beginning to get serious about starting PC remediation projects, but the deadlines are tight. With only 12 months left in this century, you can't make Y2K problems go away simply by purchasing one of the PC remediation tools that hit the market in the past year (very few of them were available previously) and instructing your staff to test and fix every application and file that every user has ever saved to a hard disk.

If your organization is just now turning its attention to the potential Y2K problems lurking in your PCs, you need to work smart. While members of your Y2K project team choose and evaluate the PC remediation tools, you can devote your efforts to making sure they apply these tools to the applications and files that are part of your organization's most valued information assets.

Remediation tools designed specifically for PCs find and correct the three major areas of potential failure—the BIOS chips, operating systems and date-field prob-



lems within software applications and files, including ones that stem from spreadsheet macros. Not surprisingly, BIOS chip and operating system problems are easier to find and correct than problems deeply embedded in software applications. Perhaps the biggest challenge for Y2K project teams is to handle PC BIOS and operating system fixes expediently in order to have time to find and fix the potentially crippling problems within applications and files created with outdated versions of applications.

Simple Fixes

PC BIOS problems are hardware based. If your organization purchased all new PCs within the past year, you can dispense with BIOS checking. On the other hand,

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you can assume that PCs with Intel 8088, 286 and 386 processors will fail the transition from 1999 to 2000 and are beyond remediation. The reason for failure is that internal clocks within PC BIOS chips will fail if the BIOS cannot perform proper date calculations. Most PC applications get the system date from the operating system, and its software-based calendar gets the date from the BIOS firmware, which in turn gets the

Y2K consultants disagree about whether TSR patches are a safe way to correct BIOS problems.

date from the BIOS chip's CMOS real-time clock. Most Y2K test suites include pass/fail tests of whether a BIOS can handle the date transition and a way to determine if a BIOS that fails this test can be remediated.

Two ways to fix a BIOS that is remediable are to obtain upgrades (usually free) from the vendors whose motherboards are installed in your users' PCs or to apply a terminate and stay resident (TSR) patch. A TSR patch is a small application that remains resident in a PC's memory until it is shut down or deleted.

Y2K consultants disagree about whether TSR patches are a safe way to correct BIOS problems. Stephanie Moore, a senior analyst at Giga Information Group Inc. in Cambridge, Mass., warns against using TSR programs. "TSRs can easily be corrupted. End users often delete them carelessly," she says. On the other hand, Mike Tiemeyer of West Coast Project Consulting in Corona, Calif., finds no problem with using TSR programs such as the one included in OnMark 2000 from Viasoft Inc. in Phoenix. In remediation projects for the banking industry, Tiemeyer provides each end user participating on Y2K teams with a diskette that has the pass/fail BIOS test from OnMark 2000. When a PC fails this test, the team member installs a TSR patch along with a

Beyond PC Remediation

CIOs cope by starting over and learning to say no

SOME CIOs ARE CUTTING A WIDE swath of change in the remediation battle. For the U.S. Chamber of Commerce in Washington, D.C., July 1, 1998, was the virtual Jan. 1, 2000, simply because the organization's member companies begin the membership renewal process 18 months in advance. By early this year, the Chamber was com-

pletely ready for the millennium with new PCs and an outsourced IS function run entirely on Microsoft Windows NT servers.

REAL-WORLD SCENARIO

pletely ready for the millennium with new PCs and an outsourced IS function run entirely on Microsoft Windows NT servers.

Before the change, 75 percent of the Chamber's 300 non-networked PCs were 386s and older, and its core applications, some of them written over 25 years ago, ran on early third-generation mainframes. "Why should we spend a ton of money on Y2K analysis and repair just to end up with exactly what we had before except that it would not fail?" says Edward Zier, the Chamber's vice president for operations. "Keeping our old applications alive into the next century would have been like doing a paint job to cover up rust spots on a 40-year-old car."

Instead of trying to meet Y2K compliance for obsolete desktops, Zier determined he could offer the Chamber's users much more simply by starting from scratch. In early 1997 he signed a 10-year contract with CAP Gemini America LLC, and by the end of that year the Chamber began to phase out its computer operations building in Rockville, Md., a process that is now almost complete. "Over the life of the contract, we expect that outsourcing our entire IS function will

cost us no more than maintaining our existing system," says Zier. CIOs at organizations that have neither the budget to outsource nor the lead time to start from scratch may need to make some unprecedented changes in order to give their IS staff time to do Y2K compliance testing and remediation and to migrate business-critical PC applications to Y2K-compliant platforms. Cliff Ferguson, director of information systems at Salina (Kansas) Regional Health Center, a 350-bed nonprofit hospital, has learned to say no to additional projects until Y2K work is done. Ferguson has had to explain to departmental directors and clinical supervisors at Salina Hospital why their application proposals will not receive attention until more than a year from now. The only PC application development efforts Ferguson's staff

will undertake during the next 12 months are those that have a direct impact on hospital safety, patient care and compliance with Medicare and Medicaid.

Ferguson was able to say yes to a scanning application for creating images for open heart surgery because of its direct impact on patient care. But, among others, he had to reject a project for creating bar code that would be placed on the arm bands of patients, which would have streamlined the patient registration process. Another project involved installing an online scoring application, which would have made it much quicker to score tests that hospital workers take during safety in-service training sessions. "We don't have time to do the PC projects that merely save people time," says Ferguson.

—P. King



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caution to the end user that the Y2K fix will quit working if the TSR gets deleted.

Although Windows 98 and Windows NT are Y2K compliant without modification, many organizations still have PCs that run Windows 95 and even Windows 3.x. If your organization is one that still uses these older operating systems, Moore suggests you obtain a free patch from the Microsoft Web site (www.microsoft.com/technet/topics/year2k/tools/tools.htm).

The Hard Stuff: Finding and Defusing Hidden Problems

Getting PC motherboards and operating systems ready for the next millennium is a straightforward task compared with the unforeseen consequences of unremediated date-field errors within applications. Giga's Moore cautions not to rely on vendor assurances as an excuse not to check applications thoroughly. For example, Microsoft refers to its products as "Y2K ready," but this statement does not protect your organization from the breakdowns that can occur from using applications based on older versions of the product.

Even newly developed applications can have Y2K landmines if they are designed with old algorithms that use search criteria based on two-digit date fields. "Most programmers will need to relearn some automatic thought processes that kick in when they write code. I sometimes discuss Y2K issues with my son who took his first programming job this year. During our conversations he will sometimes realize that he has inadvertently introduced date-field problems into new programs," says Jerry Bergfeld, a senior manager in charge of one of the Y2K projects at Cable and Wireless USA Inc., a global telecommunications company in Vienna, Va.

Spreadsheet applications often contain date-dependent functions that will be calculated incorrectly beginning in 2000. The solution for organizations that have business-critical uses for applications with two-digit date functions is to remediate noncompliant applications and migrate to compliant ones. Several sources reported upgrading to Microsoft

Office 98 and jettisoning either Corel Quattro Pro or Lotus 1-2-3 (see "Beyond PC Remediation," Page 128).

Although many of the PC-related Y2K problems are relatively easy to find and solve, it's also easy to overlook individual applications and spreadsheets whose date-field errors may have far-reaching effects. "The IS department is not always aware of how essential some PC applications are to an organization's core business," cautions Lance Johnston, a Dallas-based consultant who is the Y2K Program Manager for MigraTec Inc. He offers the following example: "I encountered a company that tracked all of its accounts payable in an application based on the earliest version

"Display is irrelevant. What matters is how the date was calculated."

—Allen Falcon

of Lotus 1-2-3. Though the program had macros, [the company] no longer had the original software. Since the CIO was unaware of this program, what chance was there that someone would bother to analyze its code for date-field problems?"

On the other hand, Allen Falcon, executive vice president of IST Development Inc. in Boston, warns that too many Y2K teams spend time fixing two-digit date fields that do not put the organization at risk. "When it comes to risk factors for date fields, display is irrelevant. What matters is how the date was calculated. Two-digit displays of four-digit dates present no risk; but two-digit displays that represent calculated date functions will break after the calendar flips over," says Falcon.

Too Little Time and Not Enough Money

These are exactly the kind of applications CIOs must stringently search for. Configuration management and version control are traditionally less stringent for PC applications than for systems under central management. The less regulation and support applications get from IS, the less likely it is that Y2K project teams

within the IS department will remember to include these applications in remediation efforts. Challenge your Y2K project leaders to become aware of applications that receive little or no support from your organization's IS function. Empower Y2K teams to find and fix even those applications that up until now have escaped the IS department's scrutiny.

Don't underestimate the money and head count your organization will need for Y2K projects. MigraTec's Johnston recommends that CIOs be in close communication with other senior managers when it comes time to allocate budget for addressing Y2K issues in PC environments. "Be prepared to go back to the well several times," he suggests. "I worked with one company that initially estimated that it had 500,000 lines of C code on PCs. When the estimate later ballooned to 10 million and then to 20 million, additional funds were not available and no

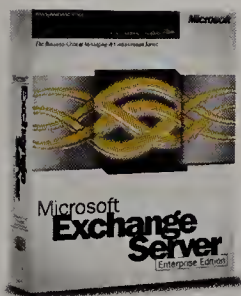
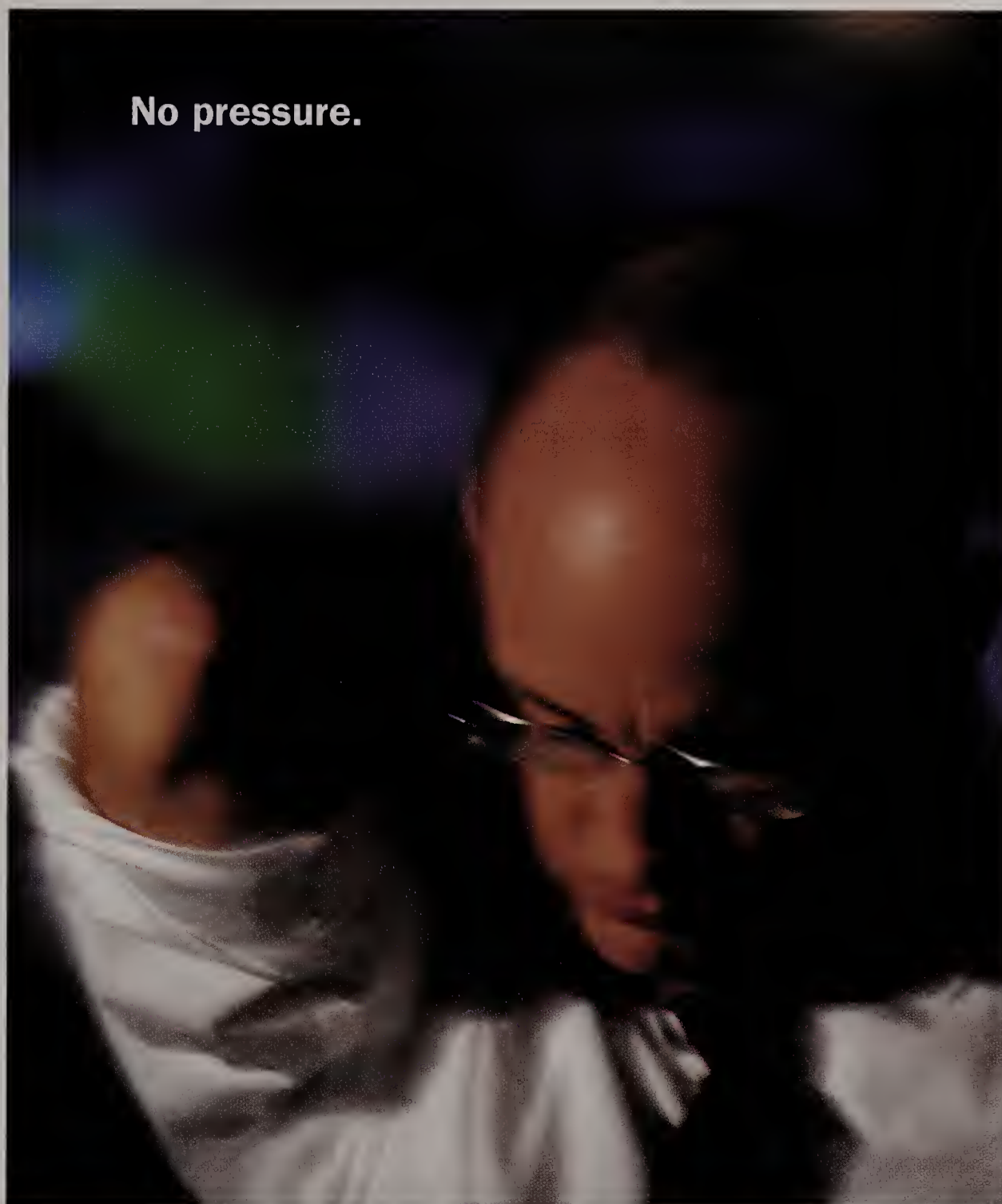
one wanted to pass the bad news upward. They had no way of dealing with the unexpected."

Typically, PC remediation projects get started late and have an inadequate allocation of resources. Many Y2K projects are running behind schedule because data center remediation projects are taking longer than anticipated. Under these circumstances, CIOs need to consider which business processes are essential to the organization and then apply this understanding to limit their focus to the critical components of key PC applications. Johnston recommends devoting a few hours to performing a quick business and data flow analysis to identify the PC-based information that drives the organization.

During the next 12 months, direct your staff to tackle the PC issues that present the real risks to your organization and leave alone those that would only cause trouble for individual users if they were to fail. There's no time to investigate all potential Y2K PC problems, but it's not too late to perform triage. **CIO**

Peggy King is an Oakland, Calif.-based technology writer. She can be reached at peggyking@aol.com.

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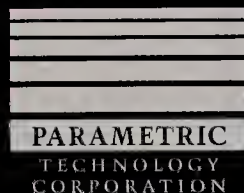
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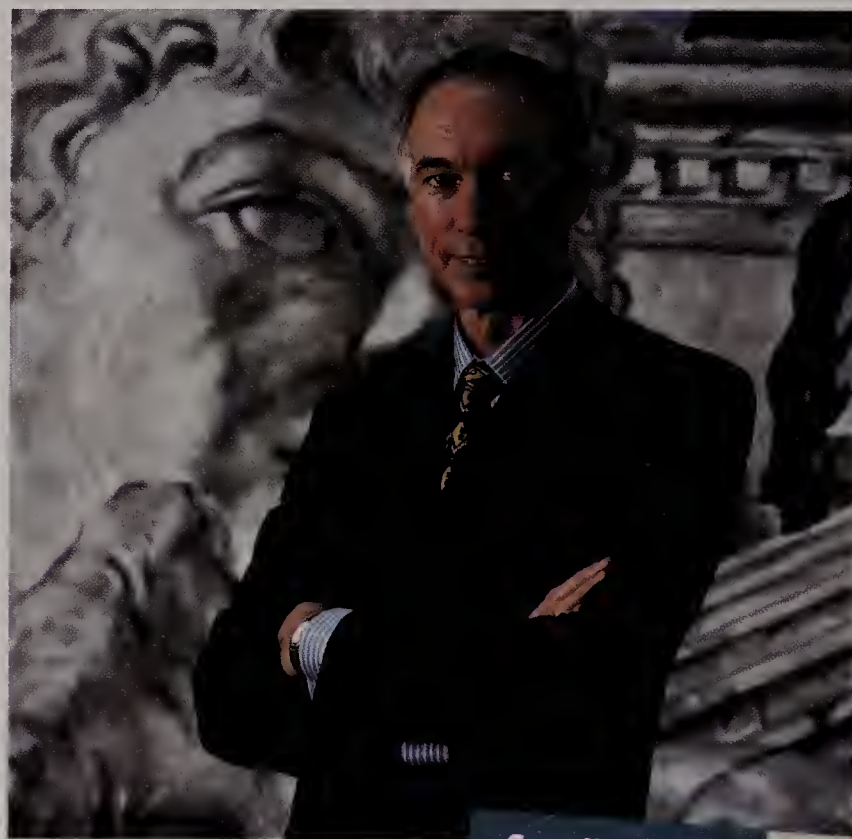
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CIO: BP has a reputation for adapting to changing business environments. How does IT contribute to that forte?

A large company tends to be monolithic, which can lead to a lot of fixed costs. In such an organization, the traditional hierarchical structure of IT is the antithesis of flexibility. But an IT architecture can enable a company to become adaptable and flexible. At BP, we've de-layered and de-constructed the hierarchical computing models by moving away from a reliance on the mainframe to a network-centric model of computing that's plug-and-playable. We have a network structure with more than 100 business units responsible for their own profit-and-loss functions. With a plug-and-play network, we essentially carry a very light backpack and change our IT cost structure and adapt as we need to.

BP is also known for its efforts in knowledge management. Isn't KM a fad? Knowledge management is a fad if you don't go beyond codifying knowledge—simply putting what people know in a database. While the context for knowledge management is computing



Spotlight On:

John Cross, head of IT at BP Group, The British Petroleum Co. PLC, London

- **Line of Business** Oil and gas exploration and production; petrochemicals
- **Bio** IT head since 1993; prior to that, was the general manager of IT at BP Exploration
- **Day to Day** Deliver services and applications to take advantage of standards and enables BP to reduce computing cost structure
- **Challenges** Helping to align the IT and organizational infrastructures of BP and Amoco Corp. as they merge

power and storage, knowledge itself is something that exists between people's ears. It's not physical. And knowledge—at least in terms of the corporation—is based on the history of experiences, and collective experiences can't be codified either. Since sharing knowledge is important only at the point and time when people need to solve a problem, the key to knowledge management is connecting people in a dialogue.

Where does IT fit into connecting people?

Plato said that one of the greatest threats to mankind was the written word because it would eliminate discourse. For humans, visual information and the spoken word are the primary modes of communication. For IT, it's necessary to move knowledge management into the sphere of multimedia. For example, at BP

we use streaming video over the Internet and 3-D spatial technology to improve knowledge sharing. Both 3-D and multimedia technology allow people to interpret and analyze information much more powerfully than is possible with written, flat communica-

tion. IT can do its part to connect humans by putting quality audio and video technology on the desktop.

What new technologies will help companies be more adaptive?

I'm fascinated by the convergence of multimedia, telecommunications and computing technologies. However, BP currently is stultified by telecommunications in some areas of the world where PTTs continue in their monopolistic ways. Right now, I can't afford to run digital streaming across the Internet everywhere.

When telecom cost structures come down all over the world, Moore's law ought to come to the global telecom industry. When and if that happens, prices will trend to zero, and desktop multimedia technologies that enhance communications will be within reach everywhere. But right now, I see strong political processes [at the PTTs] that will negate technology's progress.

What would you like your legacy to be at BP?

I would like the IT group to be sufficiently restless in terms of its spirit to never be satisfied with the current state of technology. I would also want IT to be integral to the business and for the members of the IT group to be influence shapers and reframers. —Megan Santosus



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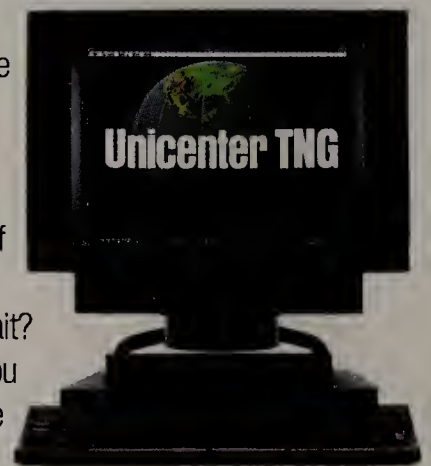
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